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1950 UNESCO 衛生日曆

大月七

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按時睡覺

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大月八

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才隨便便溺

小月九

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要吃安全水

大月十

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撲滅蚊蟲

打掃公共走道

小月十一

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巨子營養良好

大月十二

7	6	5	4	3	2	1
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21	20	19	18	17	16	15
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清潔廁所

常開窗戶

常常洗澡

手要清潔

不吃髒的食物

不用公共手巾

大月正

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大月三

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小月四

7	6	5	4	3	2	1
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大月五

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小月六

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健康祝敬

製編處事辦碁北織組化文學科育教國合聯

繪歷少馬

THE HEALTHY VILLAGE

AN EXPERIMENT IN VISUAL
EDUCATION IN WEST CHINA



UNESCO PARIS

Published by the
United Nations Educational, Scientific
and Cultural Organization
19 Avenue Kléber, Paris-16^e
First published 1951
2nd impression January 1953
Printed by Imprimerie Union, Paris
Copyright 1951 by Unesco, Paris

All illustrations from photographs or
drawings produced by the Unesco project.
The frontispiece is a reproduction of
the Health Calendar (see page 42).

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This is the fifth title in the series *Monographs on Fundamental Education*, the earlier ones being:

- No. 1. *Fundamental Education: Description and Programme*
- No. 2. *Co-operatives and Fundamental Education* by Maurice Colombain
- No. 3. *The Mexican Cultural Mission Programme* by Lloyd H. Hughes
- No. 4. *The Haiti Pilot Project: Phase One 1947-1949.*

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The Director-General, Unesco, 19 Avenue Kléber, Paris-16^e, France, and marked:
Attention: Clearing House.

Printed in France

ED. 52. III. 5 a A.

PREFACE . .

During 1949 Unesco organized an experiment in West China for the preparation of a wide range of visual aids and their practical use in fundamental education. The work was done in close collaboration with the Mass Education Movement through its Rural Reconstruction College at Pehpei. A single topic was chosen, 'The Healthy Village', in order to allow for intensive preparation and a valid comparison between the different aids.

There were, naturally, two aims in Unesco's action: to carry out a piece of educational work on the spot, and to place the experience of the Chinese project at the disposal of educators elsewhere. Although the year was a troubled one for China, the project staff carried their assignment through to a satisfactory conclusion; the health campaign they started and the experience gained by the mixed team of Chinese and foreign educators were bound to have effects in China long after the intensive project period ended.

It is with the second aim in mind, informing fundamental educators the world over, that this volume is published. It contains the reports on the year's work, written in turn by the Director and the heads of the Field Department, Health Department and Art Department. Although coming from different hands, these reports give a clear and comprehensive picture of the project; and the specialist reader is urged to read them all before taking up one part or another for detailed study.

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DIRECTOR'S REPORT

by

HUGH W. HUBBARD

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INTRODUCTION

In the autumn of 1948 the broad outlines of a project in fundamental education in China were worked out, and agreement between the agencies concerned was reached at the time of the Third Unesco General Conference in Beirut.

This project was strictly experimental in nature. It was to be devoted to educational tools, as a means of fulfilling one of the tasks written into Unesco's programme: 'To prepare sample materials, particularly audio-visual aids, for fundamental education, which at the same time will be of use and interest to Governments, organizations and individuals working on fundamental education in other Member States of Unesco, to whom information on the project will be distributed through Unesco's Clearing House in fundamental education.' (From the Working Plan of the AVP.)

A certain amount of concentration is needed in a field so wide as that of teaching aids, especially when these aids are to be examined in a 'fundamental education situation', with groups of adults and children who are largely illiterate. The project was therefore planned for a limited time: to start at the beginning of 1949 and reach a conclusive stage by the end of the year. It was similarly limited in topic: 'The Healthy Village' was chosen as the theme that should run through all the teaching aids. Health problems are nearer to being alike throughout China and around the globe than other questions of fundamental education, such as language, agriculture, and so on. The topic was thus both a means of concentrating the work of the project and an aid to making the results accessible to educators elsewhere.

To put the plan into effect an arrangement was made between Unesco and the Chinese National Association of the Mass Education Movement. The MEM, under the leadership of Dr. Y. C. James Yen, has long been active in fundamental education; its College of Rural Reconstruction is situated in the western province of Szechuan, and the surrounding rural areas are used as an experimental field for the training of mass education workers. Here was a natural basis for a project such as Unesco planned. By agreement between the organizations, the MEM undertook responsibility for the project (generally termed by that time, the Audio-Visual Project, AVP¹), while Unesco's Regional Consultant in fundamental education was to act as Director. Funds were paid

¹ Although in the course of application no 'auditory' aids were developed, the original term is kept throughout this report.

into a special MEM account, drawn on jointly by the Deputy-General Secretary of the MEM and the Director of the AVP. The staff of the MEM cooperated at all stages, planning, construction, field application, with those working full-time on the project. This will appear frequently in our reports; but since the publication appears under Unesco's name alone, it is well to stress the joint nature of the experiment, and to thank the many helpers and friends of the project.

To summarize briefly, then: Unesco planned a one-year experiment for making audio-visual aids which could be used in health teaching with a partly-illiterate rural population. The MEM College and experimental field provided the foundation for this work, and naturally as the scheme got under way it merged into a local health campaign. The chapters that follow will tell the story from the point of view of the main organizers, the Director outlining organization and dealing with broad issues not mentioned by the specialists from the Field, Health and Art Departments.

In a sense, this book is a record of the AVP—an incomplete record, for no total evaluation was possible by the end of the year, and it is known that much of the local educational effort continued after the project had closed down. But publication of the book must be justified on other grounds: to present the experiment to educators elsewhere, in the hope that they may find in the planning, organization, methods and techniques some helpful pointers for their own work. Facing the vast problems that they do, fundamental educators have at their disposal far too little information about the media and the methods that their colleagues are trying out; and experiments on a limited front may be the best device for translating such experience across national or regional boundaries.

The record of the AVP in Szechuan is given in the following pages: every attempt has been made to reflect the problems, the difficulties and failures, along with the positive achievements. In the last resort this 'translatability' is the one criterion for judging the success of the project.

THE COURSE OF THE PROJECT

General Conditions

What were the conditions under which Unesco conducted its China Audio-Visual Project during the year 1949?

This year saw the victorious Communist armies cross the Yangtze from the north and march to Canton on the south. From Shanghai on the eastern coast, they extended their territory to Sikang and eastern Turkestan on the extreme west. This wave of conquest passed over Pehpei on 2 December.

In currency, 1949 started with the gold yuan at four to the American dollar, but by 1 June the exchange was 500,000,000 to U.S.\$1. The change was subsequently made in turn to silver dollars, silver bank notes and finally to Communist currency or 'People's Bank notes', which exchanged at 12,000 to U.S.\$1 on the last day of the year. In terms of the silver dollars, the most stable currency throughout the year, the U.S. dollar was worth 50 cents in April and two dollars in December.

At intervals during the year, commodities were preferable to legal tender and the AVP (Audio-Visual Project) was compelled to deal in rice, cloth, cotton thread and gold bullion, even issuing salaries at times in these forms. During December, U.S. dollar cheques were not negotiable at all and terminal payment to the staff had to be postponed.

Communications between Szechuan and the coast were largely confined to

the air during 1949. Even this means was cut off at the end of November, but the overland routes were being opened up as the year closed. Important equipment, such as kerosene-burning filmstrip projectors, ordered from Unesco 13 December 1948, finally arrived in early August the following year. Delay in securing supplies and equipment was a heavy handicap throughout the year.

Co-operation with other agencies was largely made impossible by the cutting of communications. WHO had promised to send us a specialist in Public Health and Visual Aids, but we were not able to correspond with either the WHO office in Shanghai, or the specialist in Nanking, after the fall of Nanking and Shanghai in the spring. Likewise, expected co-operation with FAO, Wusih College of Education, Nanking University Audio-Visual Centre and others was made impossible.

The problem of securing suitable quarters in Pehpei was aggravated by the influx of refugees from other parts of China. Rooms became scarce and the cost of living rose. The main AVP office had to move twice, the Director's office once, and at the end of the year all the offices had to move again, but this time to a single building which will provide much more suitable quarters for the future.

Back in the valleys and on the terraced hillside near Pehpei, the hard-working farmers of Szechuan continued to plant and cultivate their rice. Every three days they wound their way along the narrow paths between the rice fields, carrying on poles a part of their produce to the nearby market town where it would be sold and exchanged for cloth or some other needed commodity. On the meagre income from their crops the farmers raised their families in the simplest and most elementary way. Such things as health and education were comparative luxuries, given only secondary consideration in face of the primary need of filling the family rice-bowls.

It was under these conditions that we succeeded in starting and carrying through our project of educational experiment which was at the same time a piece of international co-operation.

The Site

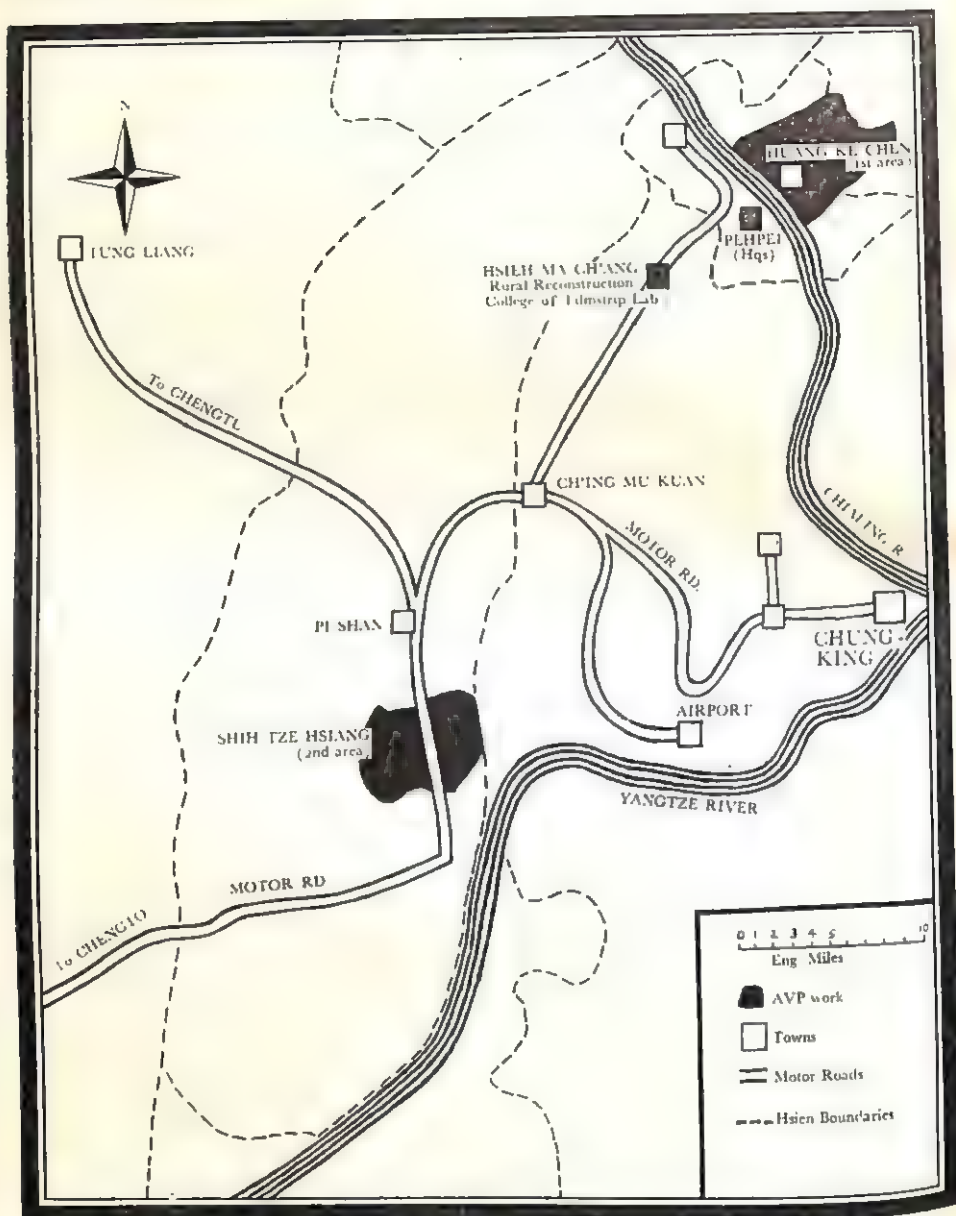
Pehpei is located in the western province of Szechuan near the centre of the Mass Education Experimental Field and 50 miles north-west of Chungking on the Chialing River. The accompanying map will show the two areas which were chosen for field work:

1. Huang Ke Chen, across the river from Pehpei, with a population of 15,516 and lying in a hilly valley between two high mountains, a typical township of this part of China.
2. Shih Tze Hsiang, south of Pishan, where is located the headquarters of the Experimental Field of the MEM, 13 miles from Pehpei. Population, about 11,000.

Pehpei is nine miles from the College of Rural Reconstruction of which the founder and president is Dr. Y. C. James Yen, Head of the MEM. A winding road of 50 miles leads to Chungking, one of the main cities of west China. All our banking had to be done in Chungking and many of our supplies secured from that city.

Pehpei itself, while the centre of an agricultural district, is a comparatively modern town built up during the last 23 years by the energy and enterprise of Messrs. Lu Tso-fu, head of the Ming Sung Industrial Co., and his brother, Lu Tze-ying, who is mayor. Pehpei was chosen for the offices of the AVP because of the co-operation of the local administration and the many facilities

CHUNGKING DISTRICT SHOWING AUDIO-VISUAL PROJECT WORK AREAS.



Pehpei to Chungking 50 Engl. miles.
Pehpei to Coll. Rur. Rec. 9 Engl. miles.
Pehpei to Shih Tze Hsiang 30 Engl. miles.

which this town offers, including comparatively good communications, electricity, library, museum and a theatre.

The Course of Events

Perhaps the quickest way to describe the development of our project is in timetable fashion, chronologically. If the reader finds some confusion in this brevity, the later sections should provide the additional explanations needed.

January: Official authorization by Unesco for starting AVP. Discussions and conferences with WHO, FAO, JCRR, MEM, Pehpei Administration, Ministry of Education. Trip Nanking, Shanghai, Wusih. Local arrangements for office, residences, etc. Topics chosen. Equipment and reference materials ordered.

February: Recruiting of staff. Renting of quarters. Purchases of furniture, etc. Arrangements for handling finances. Organization of staff and Advisory Committee. Salary scale. Deputy Director invited. Survey and evaluation arranged with Dept. Sociology, NCRR. Filmstrip laboratory audio-visual centre. Six artists start on drawing for posters and filmstrips.

March: Survey schedules completed. Advisory Committee met. Staff rules and regulations drawn up. First filmstrip completed. Cartoon expert approved. Delays in securing equipment from Unesco and Hong Kong. Office Secretary arrives. Move to new offices.

April: Final budget made. Statement on AVP released. Vaccination campaign started. Deputy Director arrives. Two more filmstrips completed. Survey of Shih Tze Hsiang started. Dr. Kuo Yu-shou visits AVP one day, bringing equipment ordered from Hong Kong. Purchase of equipment, transportation for mobile unit. First quarterly financial statement.

May: Nanking, Wusih, Shanghai cut off with expected technical advisers. Mr. McLaren engaged. Reference filmstrips begin to arrive. First field audio-visual presentations.

June: Order equipment through McLaren. Completion Shih Tze Hsiang survey. Thirteenth set filmstrip drawings completed. Processing delayed.

July: Two more sets filmstrip drawings completed. Eight posters completed. Second quarterly financial statement. Two new artists.

August: Director makes trip to Canton-Hong Kong. McLaren arrives Hong Kong 4th. Part of equipment arrives.

September: Trachoma campaign opens in Huang Ke Chen. Balance of equipment arrives. One more artist added. Direct drawing on film. Production speeded up. Slidefilm lab. started in Pehpei. Staff request salary increases.

October: Vaccination and trachoma campaigns in Shih Tze Hsiang. Trachoma campaign continued in Huang Ke Chen. Artists co-operate in three days' celebration National Holiday. McLaren lectures to artists on animation. AVP participates in National Anniversary celebration. A-V Centre begins to turn out acceptable filmstrips. One more artist added. Numerous discussions with staff about salary and final payments. Varieties of mobile posters produced.

November: Trachoma examinations in Huang Ke Chen reach 50 per cent of total population. First animated cartoon strips. Plans for continuation 1950. Nationalist retreating armies pass through Pehpei end of month.

December: Communists enter Pehpei 2nd. Three days' vacation for celebrations, etc. 80 ft. animation strip completed. Work on annual reports, finances. Staff contracts expire and 10 days interim declared. 1-10 January, Unesco tries to secure continuation of AVP. Inconclusive negotiations with new authorities.

When set out in this long-book way our time-table reflects many of the strains felt by the AVP because of abnormal local conditions. The first three months were largely spent in 'getting organized', during the next quarter the project settled down, but still felt the hampering effect of severed communications which prevented many of the technical supplies from arriving, in the third quarter Mr. McLaren arrived from Canada, supplies improved and the whole tempo was accelerated, and the last three months saw production and field work in full swing, even as the political situation and the imminent closing of the project played a part as braking factors.

Co-operating Agencies

When the AVP was first planned it was hoped that a number of agencies and institutions in China, both national and international, would be contributing their specialist skills. Had this been the case, our task would have been much simpler; but events overrule the best of plans, and the field worker has to improvise as he goes along.

In the introduction reference was made to the close relationship between Unesco and the MEM for the purposes of the AVP. Once the project got under way it functioned as an autonomous unit, but it continued to rely heavily on the College of Rural Reconstruction and on other MEM officers. The main forms of collaboration may be thus summed up:

Dr. S. Y. Ch'u (Deputy-General Secretary of the MEM) acted as special adviser and gave much time and valuable assistance throughout the year:

The survey and evaluation were directed by Professors Liang Chen and Wang Ch'i-shu of the College of Rural Reconstruction.

Matters relating to health were planned in close consultation with the Health Department of the MEM, the head of which is Dr. Y. Y. Ku.

The Audio-Visual Centre of the College was strengthened by Unesco grants of materials totalling nearly U.S. \$500 in value and, in return, co-operated in photographic work and the making of filmstrips.

Mr. Sun Lien-ch'uan, Head of the Experimental Field of the MEM showed a keen interest and helped in the general planning. The materials produced by the AVP were used in the field with the help of MEM field staff such as Mass Education Supervisors and Directors and health workers.

Help came to the AVP from other quarters as well. The Pehpei Administration co-operated cordially at many points and provided free rooms for the Director's office, a laboratory for Mr. McLaren in the theatre, and two staff residences. The Methodist Mission assigned Dr. Clara A. Nutting for full-time work with the AVP. Dr. Nutting has had many years of experience in public health in China. She was given charge of the project's Medical Department and provided valuable assistance both by advising on the health aspects of the materials produced, and, especially, in the field programme that is described in her section of the report.

The JCRR (Joint Committee for Rural Reconstruction) assisted by processing films and forwarding certain equipment. We originally hoped that JCRR might supply radio receivers to enable us to set up a broadcasting programme near Pehpei. Owing to war conditions, the JCRR curtailed and finally closed down its programme in Szechuan and these plans could not be realized.

Nanking University Audio-Visual Centre processed the first three filmstrips and intended to send Mr. M. C. Swen as a special adviser to Szechuan in the summer; both this plan and the offer by WHO to send a medical adviser were cancelled because of war-time conditions.

PLANNING AND ORGANIZING

Advisory Committee

Our original intention was to set up a committee with representatives of co-operating agencies to assume responsibility for policy, budget and major staff appointments. Difficulty of communications, even between Pehpei and the College of Rural Reconstruction nine miles away, made this impracticable. Instead, a local committee was organized, whose function was rather that of an Advisory Committee on audio-visual materials. Those on this committee were:

Dr. Y. Y. Ku, Head of Health Dept., MEM.

Dr. Y. S. T'ang, Superintendent of Pehpei Hospital.

Dr. C. K. Wang, in charge of Health Centre, Huang Ke Chen.

Dr. Chiang, in charge of Health Centre, Chih Tze Hsiang.

Mrs. Sun Lien-ch'uan, wife of Commissioner Sun.

Mr. T'ien Wei-nung, in charge of Mass Education Programme, Pehpei District.

Dr. Wang Cheng-yi, in charge of medical research, MEM.

Principles of the Work

Logically, perhaps, a statement of the principles should be placed right at the beginning or at the very end of this report. We used both inductive and deductive methods, however, and allowed our theory to be shaped by experience. The main directions of the AVP may be summed up thus:

Aim at a definite mark. Produce materials which will meet at least one concrete typical situation. Do not attempt to meet the need of all countries or you will meet the needs of none adequately.

Language, clothing, human figure, environment must be used to bring the lesson home to the individual or group for whom it is intended, affording no chance for the remark or the feeling: 'Oh, this is for others!' Other countries, perhaps even districts, will have to produce their own materials based on the same principle.

A variety of media is most effective. A multiple impact on the mind of the subject is more effective than approach along a single line (e.g., either filmstrips or posters). Studies made by the United States Department of Agriculture show that the individual is influenced in proportion to the number of different ways in which the same idea is brought home to him.

A large variety of media is desirable. Reach the subject through the eye, the ear, and personal contacts; create, if possible, a community consciousness along the line desired. In Huang Ke Chen we think it safe to say that there was no one in the whole district, youth or adult, man or woman, who did not know that eyes should be examined and trachoma should be treated. About three-fourths of the population voluntarily submitted to examination.

Play up local leaders and people. So far as possible, let them get the credit and feel that it is partly their project. Where possible, bring in local leaders to speak to the crowd over the public address system. As soon as possible, show them

pictures of themselves or their friends being vaccinated, or treated for other diseases.

Do not needlessly attack or offend any group. In dealing with vaccination, we found that one obstacle was the priests and certain superstitions. Our artists wished to attack these through the filmstrips but we decided that it would be better to lay emphasis on constructive measures and demonstrate that vaccination definitely prevents smallpox. In this way, superstition disappears before demonstration of the truth, and we avoided offending the local medicine-men who might have caused a strong reaction against strangers introducing new ideas.

The costs of reproducing the audio-visual materials must be within the range of the average rural worker. A pilot project is relatively expensive, but the finished product should be made available at a price which the rural worker or rural organizations can afford. It is of little use if no one buys it and the project will be sterile. For this reason, coloured film was not used and movies are out of the question. The cost of the equipment and the film under rural conditions is prohibitive.

The artist must understand clearly the health points, if he is to get them across correctly and forcefully to others. This is made possible by conferences with health specialists and through suitable reference materials being made available.

The artist should also be kept in touch with conditions in the field, where the materials are used. This will best be accomplished by visits to the field where his work is being used, so that he may note its appropriateness or defects and the response of the people. He will thus be able to appreciate the situation he faces, and should gain inspiration from seeing the needs of the people met through his service.

The experimental method is best. Materials should be produced, tried out experimentally and revised, if necessary several times, before being produced for general use. From this point of view, a longer period than one year would be desirable for such a project.

Study of Previous Work

The AVP was seriously handicapped by a shortage of reference materials and of accessible libraries where they might be found.

A first requirement in such a project as ours should be a thorough study of any similar work done throughout the world. Educational, health, photographic, evaluation and other problems should have as their starting point the pertinent experience of others in the same field. This was unfortunately not the case with the AVP; we drew upon a few sources, publications of the U.S. Department of Agriculture Extension Division, Leica and Kodak manuals, and some filmstrips from Unesco. These sources were not enough to enable us to profit from the experience of others.

Surveys

Probably a basic survey should be undertaken at the very outset of a project. In our case, for reasons already apparent, this was not possible. However, we did succeed in making a survey of the social, economic and health conditions in our two experimental areas while the project was under way.

The Shih Tze Hsiang¹ survey was made by the MEM under the direction

¹ See map on page 10.

of Professor Wang Ch'i-shu. The team consisted of some 17 student-workers who started in April and completed the task in two months. The Huang Ke Chen survey was led by Professor Lian Chen, head of the Sociology Department in the College of Rural Reconstruction. This survey took place during the summer vacation and lasted about two and a half months. Beside the regular team of surveyors from the MEM, about 30 students from the Sociology Department were included.

Both surveys were based upon a prepared schedule. They were designed to serve a double purpose, to provide data for the AVP and training for the participants. Since the tabulation and analysis of survey results are matters of local importance only, no further details will be given here.

The Topic and Sub-Topics

The project started with a clearly-defined brief: to prepare teaching aids on the topic 'The Healthy Village'. One of our first acts was to analyse this further, in terms of local needs and of educational possibilities. In consultation with the leaders of the Mass Education Movement and of the Pehpei Administration we set to work on the sub-division into 'subjects'.

The following criteria were established for the choice of these subjects:

the subject shall form a part of the programme of the MEM;

there must be provided in response to the audio-visual programme some practical course of action within the reach of the people (such as vaccination for the prevention of smallpox);

the subject shall be capable of wide application not only in China but, if possible, in other countries;

treatment or prevention should be as simple, certain and inexpensive as possible;

the results should be such as may be evaluated within the course of one year.

The subjects chosen after due consideration were the following:

(a) Vaccination and smallpox

(b) Trachoma

(c) Tetanus neonatorum

(d) Safe drinking water, with a special emphasis on prevention of:
dysentery, typhoid fever, cholera

(e) Safe food

(f) Home use of DDT

(g) Health habits for school children

In the course of the project it was decided to leave out (f), 'Home use of DDT', and to include limited materials on 'dish washing' (as related to disease), 'malaria' and 'tuberculosis'.

The Media

We also included an analysis of materials in our initial planning. Since we expected outside assistance from other parts of China (largely unfulfilled) and the arrival of our own expert, Mr. Norman McLaren of the Canadian National Film Board (he reached us early in August), we decided to start with the simpler media, leaving the more complex till later. The order of priorities we first set up read as follows:

posters

connected story posters

flyers

filmstrips

drama

games

animated cartoons

As the work developed during the first half of the year we found our efforts concentrated on posters of all kinds and, especially, on varieties of filmstrips. Both of the media proved to be practical and useful in the field. Supplementary 2" x 2" slidefilms, taken with a Leica camera, of all phases of the work as it progressed, proved very helpful. The possibilities of drama were not exploited due to the failure of discovering sufficient talent in writing and conducting plays. Two plays were written by members of the staff but never used in the field.

One health game was planned but had not been finished at the close of the year, partly due to the high cost of printing. We have to keep in mind the fact that fundamental education workers are generally limited in funds and can only use materials within their means.

A comprehensive and detailed report on all the materials produced, with full illustrations, is given by Mr. McLaren, Head of the Art Department, and we need not elaborate on them here. The question of cost was, however, one that Unesco had placed squarely before us. As we developed our skills and produced teaching aids we regarded the AVP as a source of supply to fundamental educators throughout the region. Each item was costed carefully and offered for sale at a fair price. War events cut us off from our possible demand as well as from our processing centres, so no conclusive evidence is available on how far a project of this kind, or a more permanent institution, might develop into a self-supporting agency. The reader must therefore take the data as he finds them, and possibly make experiments of his own to push our findings a stage further.

The Staff Pattern

In the preceding sections I have already passed from the planning to the active phases of the AVP. The question next to be asked is: what staff were employed? Under the Director's Office (H. Hubbard, E. J. Fan and Secretary) came four departments: Business (H. Hubbard in charge, with Sections for Service and Accounting); Art (N. McLaren in charge) with Sections for Artists (12 in all) and Photography; Health (Dr. Nutting in charge); Field (E. J. Fan in charge), with a Field Section and a Survey Section.

Finances

Unesco allocated a sum of U.S.\$30,000 to the project, not all of which was spent. A further sum of U.S.\$7,500 was assigned for the salary and travel expenses of a specialist in cartoon animation techniques (Mr. McLaren). The latter sum was handled directly by the Unesco office in Paris.

It was originally hoped that financial grants might be secured from certain Chinese sources but here again the conditions in China made this impossible or, in the case of official sources, inadvisable. The assistance received from the Chinese groups was in the nature of personnel, quarters and co-operation, rather than in financial contributions.

The plan that all funds were to pass through the Treasurer of the MEM in Chungking proved impracticable for a number of reasons: the Treasurer did not wish to handle exchange; cheques from the joint Unesco-MEM fund were often delayed and the Director had to advance funds (at one time nearly U.S.\$2,000); at the worst inflationary period money obtained by exchange in Chungking would depreciate seriously before reaching Pehpei, 50 miles away.

We therefore changed our procedure. Funds were deposited in instalments in the Chase National Bank to the 'MEM-Unesco Audio-visual Fund'. Cheques

on this account were signed by Dr. S. Y. Ch'u and H. W. Hubbard. These cheques had to be cashed in the field in any way found possible, usually through private individuals and organizations. The rapid inflation, particularly during the spring, presented serious problems and local currency, if held as much as one week, sometimes depreciated by one-half in value. It was therefore necessary either to use paper currency at once or to purchase with it silver dollars or staple commodities which would not depreciate in value. All this complicated the accounting and a study of the AVP accounts will provide an interesting commentary on the currency problems of the year.

The accounts were divided into two sections: (1) the U.S. dollar account in English, handled by the Director's Office, covering receipts from Unesco, disbursements to the AVP accountant and other gold accounts, and (2) the main accounts handled in Chinese currency and language by the AVP accountant in terms of the local fund.

Quarterly financial statements were rendered to Unesco and an audit by certified accountants from Chungking will take place after the closing of the annual accounts.

The overall expenses for 1949 would be as follows, as far as known to the Director:

A. AVP Account in China	U.S.\$
Summary statement ¹ (main working expenses)	10,569.29
Transportation (car)	2,000.00
Terminal pay to staff, Category B ² (delayed)	1,800.00
B. Payments by Unesco	
To Canadian Film Board (equipment)	3,000.00
Other purchases by Unesco, Paris (estimate)	500.00
Total.	17,869.29

Salaries

Differential salaries always create a serious problem in a joint project of this nature. The basis on which we set to work was the scale used by the MEM, except for members of the Director's office. This principle was embodied in the original contracts and staff regulations; but it must be said that the MEM scale was felt to be too low and caused considerable dissatisfaction on the part of the staff. The Director's office thought that, in view of the short duration of the AVP, some compensation should be made for this low scale; we therefore offered to the staff a terminal payment to take effect at the end of 1949, roughly totalling U.S.\$1,800. More adequate salaries should be paid if the project is to be continued, despite the rift this may cause between project staff and their non-project colleagues. To convey an idea of the salaries paid during the months July to September, the highest paid artist received the equivalent of U.S.\$18 per month, plus room and furniture allowance.

With the permission of Unesco and the MEM, a special category of workers had to be created, not bound to the MEM salary schedule. These were members of the Director's office and included the Deputy Director, the stenographer-secretary and an interpreter for Mr. McLaren, who served also as

¹ For details of which, see Appendix 1.

² Category A (Deputy Director, Secretary and Interpreter) not included, and to receive bonuses later.

general liaison officer. This category was engaged on a U.S. dollar basis (the first two at U.S.\$100 per month and the last at \$40. Room rent was additional).

TECHNICAL QUESTIONS

For our processing and reproduction a number of techniques were used. Direct art work and some printing processes are fully covered by Mr. McLaren's report later. Some general remarks may be enough at this stage. The process of hand-colouring films was first undertaken in this country in north China in 1938 by the writer. In western countries the cost of hand-colouring makes the use of colour film more satisfactory and even more economical, but in China one frame can be coloured for less than five cents (U.S. currency), making the cost far less than colour film. A second advantage of hand-colouring lies in the superior transparency of the water-colours used, an important factor in rural districts where light sources tend to be weak. The use of this process requires good eyes, a skilful hand and considerable practice. Half of the artists tried out in the AVP have not proved satisfactory.

Photographic Processing

Fundamental to the whole project, however, is the laboratory for photographic processes. Apart from the fact that events prevented us from using the technical resources of institutions elsewhere in China, it seems clear that there are sufficient grounds for wishing to have, in a project of this kind, a laboratory close at hand. Direct supervision of filmstrip processing and the need to co-ordinate various elements of the AVP are both extremely important.

It was therefore decided to establish a filmstrip laboratory in co-operation with the MEM at the National College of Rural Reconstruction. Later events proved this to be a wise decision. There already existed a photograph laboratory with some radio equipment at the college, and this was enlarged to include complete filmstrip processing. By the contract drawn up for this purpose, Unesco provided equipment costing nearly U.S.\$500 to the audio-visual centre and, in return, the audio-visual centre did our photographic work and processed our filmstrips for the cost of materials. The implementation of this contract proved to be a slow process. Equipment ordered in January from Hong Kong finally arrived about 1 May. No suitable technician or head for the audio-visual centre could be secured until, after months of search and waste of materials, Dr. S. Y. Ch'u came to the rescue with a competent and well-trained man on 1 October, since when the processing has progressed speedily and well.

Because of accumulation of work at this centre, the making of 2"×2" filmstrips was started in Pehpei, in a small laboratory in the residence of the Director. A list of the filmstrips produced will be found in Appendix 1.

Equipment

The needs of the Field and Art Departments are described later. Our basic equipment amounted to the following items:

For photographic development, printing and enlarging

The usual trays, tanks, bottles, chemicals, papers, etc. One Praxidos enlarger with Leitz Hector lens f.2.5 (transferable to Leica camera or Leica copying attachment);

Eastman Plus X or Du Pont Superior 2 negative film for photos (combining fine grain with sufficient speed);

Eastman positive film for filmstrip. Safety film is best but Nitrate may be used in filmstrip projectors;

Ample electric lights, red and white;

Photographic timer;

16-35 mm. Morse G-3 100 ft. developing tank.

For making filmstrip negatives

Sept camera (borrowed);

Stand with easel;

Variable transformer, if electric current is not constant;

Two 100 watt electric lights with clamp-on sockets.

For printing filmstrip positives

Sept camera (same as above);

Light source (enlarger or electric bulb);

Stand.

For making slide films

Leica camera;

Leica copying attachment;

Leica printer;

35 mm. developing tank.

For storing materials

Metal containers for filmstrips (locally made from rustproof material);

Wooden boxes to hold 24 containers (locally made);

Wooden boxes to hold 150 slidefilms (locally made).

For office purposes

The usual equipment—typewriter, roneo machine, stapler, etc.

TRAINING PROGRAMME

As the AVP developed, a considerable amount of time was necessarily spent on the training of staff. This will be the case in any virgin territory of this kind, and may be regarded as the indispensable second element, after production, of a project which is to have more than short-term aims. Some of the significant points from our experience may be summarized round our main activities—art, health work, the film laboratory, field work.

Art

After a staff of artists had been secured—not the easiest thing in the world—it was necessary to tell them what a filmstrip is, showing them numerous examples and then to instruct them in the restrictions which the nature of the filmstrip imposes upon the artist.

In Appendix 7 will be found an outline of the original instructions given the artists both orally and in written Chinese. These directives are divided into: general information, principles, and rules for making filmstrips.

Upon the arrival in August of Mr. McLaren, who was at once appointed Art Director, the instruction and supervision in art work was vastly improved.

Health

The artists might be well qualified in art, but know little or nothing about health rules. It devolved upon the Health Director to drive home the points which were to be incorporated in pictures.

This was often done by actual demonstration. When work was being done on trachoma. Dr. Nutting brought into the studio patients in all stages, mild to totally blind, for the artists to observe and sketch. The artists were themselves examined for the disease. Smallpox patients were photographed in the hospital. A baby was photographed in the various steps of tying the umbilical cord, for the filmstrip on tetanus neonatorum. Incidentally, the artist who chose this topic was expecting his wife to present him soon with his first child, and developed the keenest interest in the subject.

Sometimes the Health Director took pains to write out the essential points to be kept in mind in preparing materials on a subject. An example of this is found in Appendix 8, on 'Safe Water, Safe Food'.

Film Laboratory

In the enlarged audio-visual centre, the Director spent days personally going through every detail of the process of making filmstrips. Some of the equipment had to be improvized in ways that could hardly be imagined abroad. For instance, the water system consists of a stone reservoir, to which water from the river was carried in two buckets at the ends of a carrying pole. Then the water passed through filtering sand into a second tank of stone. Thence it was carried to the nearby laboratory through bamboo pipes which finally connected with leaden pipes and brass faucets.

Later in the year, Mr. McLaren gave detailed instructions for the photographing of animated cartoons and of sound track.

Field Equipment

Field workers had to be trained in the use of each piece of equipment. The AVP was fortunate in having as head of the Field Department the Deputy Director, Mr. Eugene Fan, who is a specialist in electrical engineering and physics. Classes for instruction in filmstrip projection were held both at Pehpei and Shih Tze Hsiang. The operators of the generator, amplifier, loudspeaker, etc., each had to know his business thoroughly. The man at the microphone needed instruction on how best to use his voice and his manuscript, although he was naturally gifted in making a lively, humorous and interesting talk.

SUMMING UP

From the first, the Director and the staff felt entirely inexperienced in the field of evaluation. Unesco and other parties were consulted but no concrete plan for evaluation and no reports on evaluation of similar work were submitted to us. The heads of the departments of the AVP discussed this problem and we felt that no scientific evaluation was possible under the conditions obtaining under the AVP. The question remained an unsolved problem throughout the year.

The best plan which could be evolved seemed to be to ask the Sociology Department of the MEM, which had been responsible for the survey, to conduct some form of objective evaluation after the closing of the AVP. Professor Liang Chen was consulted and agreed to undertake this evaluation during the winter vacation (in February 1950).

Unfortunately, the MEM has been obliged to close up almost all its field work, due to the fact that its registration has not been completed and it has not

yet been recognized by the Peking Government. Steps are now being taken to obtain this recognition. We would recommend that the evaluation be carried out during the summer vacation under the supervision of Professor Liang Chen and that a sum of money be set aside for this from the remaining budget. It is too early now to foresee what would be the conditions by summer time and what the cost may be at that time.

Self-Evaluation

In the absence of an objective evaluation, it seemed worth-while for the Director and the Department Heads to set down their opinions with regard to the results of the AVP. These are impressions only, but perhaps they are better than nothing. They are here set out in point fashion.

(a) Purpose of the use of the project materials

In order to evaluate, it is necessary to have a clear understanding of the purpose of the project being evaluated. Our group set down the following purposes:

Principal purpose: To induce people to take some definite action beneficial to health, e.g., vaccination, trachoma examination and treatments.

Secondary purpose: Health education, or the change of thinking and habits from unhealthy to healthy.

Note: It is highly desirable, in all ways possible to work for a community consciousness along the line desired, so that everyone will be talking about the subject and there will be something in the nature of mass action as a result. (This was true in the Huang Ke Chen district where the majority of the population voluntarily submitted to examination for trachoma and treatments. It is safe to say that the doctor and nurse were known by virtually everyone in the district, as was the purpose of their work.)

(b) Amount of use of the materials

The results will naturally depend in some measure on the amount of use of each kind of media. The posters covering the various health subjects were distributed throughout the two districts to a maximum of not more than 500 covering each subject. The filmstrip shows for both districts numbered 21. On each occasion, from three to five filmstrips would be shown, usually covering one or two subjects. The Field Department report will give details. The portfolios and the flip books were used in connexion with the clinics and no record was kept. The purpose of the small flip books was to induce the patients to return for 21 days for treatment. This was one of our most difficult problems and even flip books did not succeed in solving it.

(c) General value of audio-visual aids

(i) In making contacts with community leaders

It was felt that the aids had very great value in making contacts with the leaders of the community. The latter were always glad to have the opportunity of helping put on filmstrip shows and co-operated enthusiastically. Without some such contact, the conditions might have been more difficult.

(ii) In introducing workers to community at large

The audio-visual aids had a great value in introducing the workers and their ideas favourably to the community at large. The evening shows, which gathered from a few hundred to 3,000 people together, provided an entertaining and interesting evening of pictures, songs and talks and broke the ice between the field workers and the local residents.



(iii) *Work made easier*

The health workers, doctor and nurse, felt that the audio-visual aids made their work very much easier and more enjoyable than when there were no such aids.

(iv) *The foreign woman doctor as an audio-visual aid*

Perhaps the most important single audio-visual aid was the foreign doctor. A crowd always gathered around this unusual and interesting sight. Dr. Nutting is not an audio-visual aid in the orthodox sense but there is no doubt that her presence in the community attracted a great deal of talk. Questions and conversation followed, which usually aided in the health treatment desired.

(v) *Location of the clinic*

It was found that the location of the table on which the doctor and nurse worked with their supplies was a very important factor in attracting the passers-by. When the clinic was not easily seen, there were fewer people to be treated, but if it were moved alongside the main street, a crowd was seldom lacking.

(d) *Comparative value*

(i) *Filmstrip the best*

It was the unanimous opinion of the group that the filmstrip is far ahead of all other media used. (The word 'filmstrip' here includes the ordinary filmstrip and also the separate filmslides, 2" x 2" in size.)

(ii) *In reaching large numbers*

In this respect, the order of effectiveness was given as follows:

Filmstrips

Posters

Portfolio

Flip-books

Mobile posters

(iii) *In making a deep and lasting impression*

The order of the effectiveness for this was rated the same as above, for reaching large numbers.

(e) *Distinct contribution of the AVP*

It is felt that the most distinct contribution in technique made by the AVP was in the field of direct artwork. Filmstrips and filmslides of standard types have been produced and used in many places. So far as we know, the use of direct artwork on filmstrips has never been explored and exploited elsewhere. This might be considered a more or less pioneer field where the AVP, under Mr. McLaren's direction, has shown new possibilities.

(f) *Other media to be studied*

If the AVP is to be continued the types of audio-visual aids to be added were listed as follows, in the order of importance:

Drama

Booklets and printed matter

Radio, if possible

Demonstrations where

Picture story books

filmstrips are not usable

(like comics in the U.S.)

Box lanterns

More songs

Puppet shows

POINTERS FOR THE FUTURE

After this short account of our conclusions about the year's work of the AVP, we turn naturally to 'recommendations' of a general kind, whether for a continued project on our original site or for a similarex perimenta nywhere else in the world.

Adaptation to Conditions

While there is value in a limited topic which allows for intensive work, care should be taken in suiting it to prevailing needs. Thus in Pehpei, since the change of government, it may be remarked that the official policy has been to emphasize reconstruction. The government does not give precedence to health in its present programme, considering that a poor man must be able to feed his family before he can think about health measures. With official agencies devoting their attention and resources to agriculture, an educational project to teach better farming practices obviously has a sound foundation.

In a general way this is true for all regions. The choice of a topic should be made with careful regard to the plans and resources of public and private bodies; it may be that the prevailing stress is laid on health, or on agriculture, or on local industries, vocational training and co-operative organization. An educational experiment can be devised to suit any of these.

In the long run, of course, these 'topics' are simply aspects of a single objective, a community that is happier and better off than it was before. The educator will not wish to limit his field indefinitely. Thus, from our observation of the AVP it was clear that a change of topic, say from health to agriculture, would have been welcome after the first year both to the artists and to the educators. The former were becoming tired of their subject, the latter conscious of the close link between 'The Healthy Village' and 'The Good Farmer'.

And while we are on the subject of staff, the problem of suiting salaries to local living rates should be raised. A project that is initiated from 'outside' (whether internationally or from another part of the same country) often brings with it salary scales which differ from those obtaining locally. We started the AVP with the local MEM scale—and met difficulties. The best solution seems to be to base project staff salaries on the salaries paid by educational and similar institutions in the locality, but with an extra allowance for the special nature of project work.

Direction in Techniques

The reader will find in this book a full analysis of the media we used, with some mention of the techniques we planned for but could not realize. He should be able to draw conclusions for his own work. At the time the AVP ended, our own conclusions for the future locally were as follows:

Direct artwork in filmstrips is a comparatively virgin field where the AVP, under Mr. McLaren, has explored many possibilities and techniques. From these should be chosen the most fruitful and these materials, based on our experiments, should be produced for general use.

The double frame (Leica size), owing to its size, offers the maximum opportunity for using direct artwork and should be used more in future. The single-size frame severely limits the artists in the content and quality of the picture drawn.

Picture books or flip-books are extremely popular in China, as are comics in the United States. However, the subject matter is often deplorably puerile or even harmful. Many of the present filmstrip drawings could be made into small picture books for wide distribution. It would be better however to draw directly for picture book purposes.

Box lanterns compare unfavourably with filmstrips and therefore were not used by us. But where filmstrips are not available, sets of pictures can be printed on thin transparent paper, 15" x 20" or larger, and used to good effect with box lanterns for groups up to 100.



In order to obtain the best results from the artist, it is important that he visualize the situation in which his work will be used to help the rural people. In this and every other possible way, the creativeness of the artist should be stimulated and inspired. We feel that the AVP has largely failed here. Mr. McLaren has made the following recommendation in this respect:

'At this stage, since none of the artists is any longer new to the work, and many of them have got quite a backlog and background of experience, I feel they should all be thoroughly re-acquainted and re-indoctrinated with the general aims and purposes of this Unesco project. (The detailed problems of their specific jobs have tended to blind them to the overall purpose.)

'If they have (1) a vivid realization of our purpose, and its details; (2) a sound knowledge of the health topics we are to concentrate on; (3) a closer contact with the field work; and (4) an awareness of all the possible different technical approaches, they should be in a position, considering their past work and experience, to get together and have group discussions on our audio-visual problems and solutions. In this way, we may be able to tap their imaginations for new ideas and approaches and as much as possible make them the generating source of our work.

'I may be hoping for too much, but I feel, from a rather similar set-up with artists in Canada, that the more they can be given responsibility for planning the ideas for their jobs, subject of course to veto and criticism from above, the more successful and enthusiastic will be their work.'

Concentration of Offices and Laboratories

It is important that the offices and the laboratory technician making filmstrips should be in close contact. The artist needs to be made more fully aware of the requirements which the filmstrip imposes upon his art. The technician working in the laboratory also needs closer supervision than was possible at a distance of 10 miles. Better results will follow if offices and laboratory are in close proximity.

The offices should be combined. Owing to the difficulties of securing suitable rooms and sufficient quality, the Director's office was separate from the artists' studios. A third office was devoted to animation work. In spite of frequent visits from the Director to the main office, the separation was unsatisfactory and both supervision and personal relations suffered.

At the close of the year, we succeeded in renting a whole house where all the offices could be combined and the laboratory housed as well. If this plan materializes, it should be to the benefit of all concerned.

If the Mass Education Movement expects to carry on this type of work after the close of the AVP it would probably be best to move all the offices either to the National College of Rural Reconstruction at Hsieh Ma Ch'ang, where the Audio-Visual Centre is now located, or to Pi Shan where the headquarters of the MEM are located. There would be some loss from the point of view of communications and other facilities offered by Pehpei, but there would be also a considerable advantage in having the whole staff live and work together in a small community, without the distractions of town life.

FIELD DEPARTMENT

by

EUGENE J. FAN
Chief, Field Department

OUTLINE OF FIELD DEPARTMENT REPORT

F.1. PURPOSE

2. AUDIO-VISUAL AIDS AND THEIR APPLICATION

- 2.1. Wall posters
- 2.2. Picture books
- 2.3. Mobile pictures
- 2.4. Filmstrips and filmslides
- 2.5. Animated movies

3. EQUIPMENT

- 3.1. 1942 Chevrolet
- 3.2. P.A. system
- 3.3. Voltage regulating transformer
- 3.4. Powerlite generator
- 3.5. Storage batteries
- 3.6. The SVE projector
- 3.7. The SVE gasoline or kerosene projector
- 3.8. The screen

4. PERSONNEL

- 4.1. Te-wei Wang, the commentator
- 4.2. Wei-ch'uan Fan, the operator

5. FIELD TRIPS

- 5.1. Planning the field trip
- 5.2. Making contacts with the Chen office
- 5.3. Off for Huang Ke Chen
- 5.4. Transportation
- 5.5. Setting up the apparatus
- 5.6. The evening programme
- 5.7. Food and lodging
- 5.8. Trip to Shih Tze Hsiang
- 5.9. Record of field trips and filmstrip shows
- 5.10. Teaching the field workers how to operate the kerosene or gasoline projector

6. ATTENDANCE

7. RESULTS

8. CONCLUSIONS

FIELD DEPARTMENT REPORT

F.1. PURPOSE

The purpose of the field work is twofold:

- (a) To test out the audio-visual materials prepared by the Unesco Audio-Visual Project and see how effective they are in the improvement of rural health.
- (b) To teach the rural people by audio-visual aids to understand how the common diseases, such as smallpox, trachoma, dysentery, cholera, typhoid fever, tetanus, etc., are spread and contracted, thus not only creating a keen interest but also developing especially a united effort in the prevention of such diseases.

2. AUDIO-VISUAL AIDS AND THEIR APPLICATION

The audio-visual materials which we use in the field may be classified into the following groups:

- (a) Wall posters and connected pictures
- (b) Picture books
- (c) Mobile pictures
- (d) Filmstrips and filmslides
- (e) Animated movies

2.1. *The wall posters* may be subdivided into

- (1) *Advertising poster or flyers* which give the date and place of an evening health-education programme or an outdoor clinic for vaccination and trachoma treatment. These are carefully designed and drawn in colour and posted on walls at street corners or places where people are likely to gather.
- (2) *Public health posters* which are used primarily for health education purposes. Each poster of this kind is intended to convey only one essential thought, such as, a healthy baby, a girl with pockmarked face, 'do not use a public towel on your eyes', etc., in order to make a deep impression upon the mind of an ordinary illiterate farmer. These posters are also drawn in colour and distributed among the country schools and country offices so that they may be put up at convenient places for people to look at.
- (3) *Health calendars* are another kind of wall poster which is intended to go into every home within the experimental field. The purpose of these calendars is to teach health habits, and the idea of a calendar is to add something to the poster which can be used and looked at throughout the whole year.
- (4) *Connected pictures* differ from the simple Public Health posters in that the former tell an interesting story by a series of events, while the latter only teach one idea and at a single glance. These posters are not only used in public places but also go into the homes of the country people so that they may be looked at and talked about at leisure.

2.2. *The picture books* are used for the people to look at while they are waiting for examination or treatment at the outdoor clinic. Usually people come in crowds for treatment and unless their interest and attention is held, they will get tired of waiting or go away without medical attention.

2.3 *Mobile pictures* have become indispensable working tools. They prove to be one of the most useful and effective visual aids we have produced so far. When our field nurses go out they carry these pictures along and show them to people when they have a chance. For purposes of explanation and illustration nothing is better; when words fail to explain how dangerous trachoma is, for instance, these pictures can help to get the idea across.

2.4 *Filmstrips and filmslides* are the main features of our evening programmes. They are the best advertisement of our work, and whenever an announcement is made that there is to be a show of filmstrips, crowds of people are sure to be there. The advantages of the filmstrips and filmslides are manifold, some of which may be mentioned.

- (1) The filmstrips are usually shown in the evening when the country people are free to attend meetings for entertainment.
- (2) Since the pictures are projected on a large screen, they are clear and easy to look at.
- (3) The story is rendered much more interesting by a commentary accompanying the filmstrip. The commentator tells the story step by step in such a fascinating way that people sometimes forget themselves and feel as if they were a part of the story.
- (4) Most filmslides are actual scenes photographed at the outdoor clinics, such as vaccinating a small child during a vaccination campaign, examining an old man's eye for trachoma treatment, etc. In certain ways people like these slides better than the story filmstrips because the former show the actuality while the latter are nothing but imagination 'composed' into a story.

2.5 *Animated movies* on health topics are still in the process of making under the directorship of Mr. Norman McLaren. For our field work we have tried a few 16 mm. movie films of American make, which lead us to the following conclusions:

- (1) They are fascinating to the country people because most of them have never seen a motion picture.
- (2) Except out of curiosity, foreign movies, even with Chinese commentary, are not appreciated by the country people.
- (3) Movies require more complicated projectors and also electricity which is not so easy to get in rural districts.
- (4) The fact that much greater expense is involved in movies also makes them impractical for use in rural districts.

For a detailed description and application of the above-mentioned audiovisual materials the reader is referred to Norman McLaren's Art Department Report.

3. EQUIPMENT

In order to facilitate our field work we installed what we call a Mobile Unit which consists of the following:

- 1 1942 Chevrolet sedan
- 1 P.A. system
- 1 Voltage regulating transformer
- 1 Powerlite generator
- 2 6-volt storage batteries
- 1 SVE Model AAA projector
- 1 SVE gasoline projector
- 1 9×12ft. screen



3.1 *The 1942 Chevrolet*, although a second-hand car, has been giving satisfactory service. When we go out to Shih Tze Hsiang, about 50 miles from Pehpei, this vehicle not only provides us with a means of transportation but at the same time acts as an advertisement, because as soon as people see our car in the village they know that they are going to have a picture show.

Loading the car always draws the attention of the local people. Usually from two to four people are required to carry our generator to the trunk of the car. Then the gasoline tank and the storage batteries go with it, so that the generator can be operated right in the car when it is needed. The rest of the apparatus occupies most of the back seat, although from four to five people, besides the driver, have to travel in the car. By this time the car is, of course, rather overloaded, and our bedding, usually tied in large bundles, has to go on top of the car. This is our real Mobile Unit.

3.2 *The P.A. system* consists of an audio amplifier capable of delivering 20 watts of undistorted power output. It is a home-built affair and works quite well.

A special feature of this system is its power supply, a power pack with different input voltages both D.C. and A.C. This is a decided advantage to us because in places where there is no A.C. power we can still depend upon our storage batteries. It may also be mentioned here that this power pack has incorporated in it a selenium rectifier which can charge a 6-volt storage battery on an ordinary A.C. power line.

The microphone is a RCA velocity type which gives very good quality of reproduction.

For recorded music we use an ordinary portable phonograph with a pickup attached to it.

The loudspeaker is a 12-inch permanent-magnet type which gives ample volume for our outdoor audiences.

3.3 *The voltage regulating transformer* has a power rating of 1,000 watts with input voltage taps ranging from 80 to 220 volts. This is necessary because the fluctuation of the line voltage in the outskirts of Pehpei is very bad. Two outlets, one for 110 volts, and one for 220 volts, are provided so as to meet the requirements of our different kinds of electrical equipment.

3.4 *Our generator* is a Words' Powerlite Electric Plant which is capable of delivering 750 watts at 115 volts A.C. It is the heaviest piece of apparatus we have and always attracts a great deal of attention wherever it goes. To furnish large quantities of electric power in rural districts in China is still a problem to be solved in the future. Small as it may seem, this electric generator has given us all the power we needed and its service so far has been very satisfactory.

3.5 *Storage batteries* are not only used to start gas engines but also serve as a source of electric power for our P.A. system. When, on one of our field trips to Shih Tze Hsiang, we made an announcement through the P.A. system in the car, people were amazed to hear it.

These batteries also furnish a source of light in our animation and photo laboratories, since we have no line current in the daytime.

3.6 *The SVE model AAA Projector* has a 300-watt lamp in it which is strong enough to throw a clear picture on a 9×12 ft. screen. It can be used for either filmstrips or filmslides and is quite easy to operate.

3.7 *The SVE International Gasoline or Kerosene Projector* is used for smaller groups

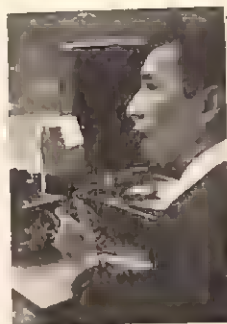
of people and in places our electric generator cannot easily reach. We find this kind of projector is most suitable for country use because it not only performs the duty of a projector but also functions as a powerful lamp which is desirable for evening programmes in the country.

3.8 The screen is made of white cloth with a black border around it. It is 9×12 ft. and can be hung up very easily by four bamboo poles.

4. PERSONNEL

E. J. Fan, Department Head;
Te-wei Wang, Commentator;
Wei-ch'uan Fan, Operator.

These pictures show the operator and commentator at work.



4.1 Mr. Wang is a man of great talent who was originally engaged as an artist. His speciality is lettering and handicraft. At the beginning of our field work we were badly in need of someone to explain the pictures for our filmstrip presentation. Mr. Wang was suggested because he speaks the local dialect very well. We tried him as a commentator and found it was a great discovery. His technique in using proper expression and his fluency draw the attention of the audience, and his voice really adds life to the pictures.

4.2 Wei-ch'uan Fan is also an all-round man who has proved himself valuable for the field work. He is very clever with his hands and therefore has a natural interest in mechanical jobs. As an operator he handles our machinery very well and as a field worker he is tactful and sociable and knows how to approach the country people.

5. FIELD TRIPS

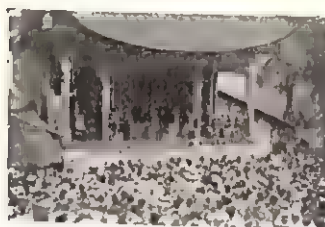
5.1 *Planning the field trip*

Our two experimental fields, namely, Huang Ke Chen and Shih Tze Hsiang, as may be seen on the map of the area (p. 10), are separated by a distance of 50 miles. Several important factors have to be considered in planning the field trip.

- (1) The season of the year should be the one most appropriate to the particular health campaign under consideration. Vaccination, for example, should be given only in the spring, according to the Chinese habit.
- (2) The day of the month should be so chosen that the largest number of people can attend our programme. This, in China, is the market day.
- (3) The place has to be quite large and open so that people feel free to come. The courtyard of a temple or the playground of a country school are usually the best places.
- (4) Opportunities should also be given to those people who live very far from a market town and therefore cannot stay late in the evening to see our programme.
- (5) The application of audio-visual aids should always be in co-operation with the rural health centre. In other words, arrangements have to be so made

that each filmstrip presentation is immediately followed by an intensive medical examination or treatment.

With these factors in view we plan our work so that each of our experimental fields will receive the proper attention it requires. A brief account of our work follows.



5.2 *Making contacts with the 'Chen' office*

Before making a field trip we always call at the Chen office and tell the Chen Officer what our plan is. Since our sole purpose is to improve the health conditions of his Chen, he is, of course, more than glad to help us in any way he possibly can. The first picture above shows the interior of the Chen office.

5.3 *Off for Huang Ke Chen*

Huang Ke Chen is separated from Pehpei by the Chialing River. We cross the river in a small boat. The second picture above shows the boat loaded with our machinery and ready to leave for Huang Ke Chen.

5.4 *Transportation*

Huang Ke Chen is quite a hilly place and no motor roads are built there. The only means of transportation is human labour: things have to be carried by the so-called labourers. We do not have to hire these men; they are the local farmers who are always glad to do what they can to make our programme a success.

5.5 *Setting up the apparatus*

When we reach our destination we first set up our apparatus for the evening programme. In rural districts the Pao school is the centre of all kinds of rural activities and is therefore an ideal place for our work. Upon our arrival, we are always greeted by crowds of people. The chief of the Pao, the school children and the teachers are always willing to help. Certain people go to spread the news, others help to erect poles for the screen, and the boys race to carry tables and benches for the projection apparatus. Thus in an hour or so everything is ready, and the evening programme starts shortly after

dark when the country people are free from their daily routine. Pictures opposite show how our apparatus is set up at the playground just back of the schoolhouse.

5.6 *The evening programme*

Our evening programme usually starts about 7.30 p.m. We open with recorded music, amplified through the P.A. system, which can be heard over quite large areas. This helps to draw the crowd. Then we show our filmstrips; the time for each filmstrip varies from 20 to 30 minutes depending upon its length and also upon the amount of commentary that is necessary. We figure on an average of one minute per frame. If we run it too fast the audience will not be able to grasp the meaning of the pictures shown. During each change of filmstrip we add a little music to avoid monotony. So far we have never had any difficulty in holding the interest and attention of the audience. Usually we show about four filmstrips and end the programme with an announcement telling the people to come back in the morning for medical examination or treatment.

5.7 *Food and lodging*

As the market town of Huang Ke Chen is near the river, we can still manage to get home before midnight, and consequently no provision for food and lodging is necessary. But when we go into the interior of the country where no hotels or restaurants can be found we have to stay over-night in the country school. Although it is not so convenient as it is at home, the local people treat us with such kindness and sincerity that we do not mind the difference at all.

5.8 *Trip to Shih Tze Hsiang*

Shi Tze Hsiang, as seen on the map, is just a short distance south of Pishan where the MEM Headquarters are located. As the Chengtu and Chungking highway runs through it, we can travel there by car. Usually we stop at



Dr. Nutting, Dr. Chia and Nurse Chang engaged in their medical work.

Pishan to pick up some of the doctors of the MEM to help with the medical part of our work. For our headquarters in this little place we were able to rent two rooms from a family who live just by the side of the motor road. This makes it very convenient for us especially in the matter of transportation. The landlord is a noted man in the town and is of great help to us in many ways.

The evening programme and the health work are carried out in the same way as they are in Huang Ke Chen. The picture opposite shows a big crowd at a daytime opera. This is the place where we give our evening programme. The reader can get some idea as to how large our audiences are.

5.9 *Record of field trips and filmstrip shows.*

	Huang Ke Chen	Shih Tze Hsiang
May 1949	2 trips - 1 show	1 trip - 2 shows
August 1949	1 trip - 1 show	
September 1949	2 trips - 2 shows	1 trip - 3 shows
October 1949	4 trips - 4 shows	
November 1949	3 trips - 5 shows	1 trip - 3 shows
Total	12 trips - 13 shows	3 trips - 8 shows

5.10 *Teaching the field workers how to operate the kerosene or gasoline projector*

In order to make the field work more extensive and efficient we have trained some of the MEM field workers in the operation of the gasoline projector so that they can still make use of our audio-visual materials during the absence of our mobile unit. We have loaned one complete set to the health department of the MEM at Pishan and we hope to do the same in Huang Ke Chen as these instruments are so helpful to the field work.

6. ATTENDANCE

Although we had no accurate way of counting the number of people who attended our evening programmes, we always tried to make an estimate. The usual method we followed was to count the number of people lengthwise and then crosswise. By multiplying these two together we got the total. Thus the total attendance for all our field trips and evening shows was estimated to be about 20,000, which, judging from our field experience, is not an unreasonable figure.

7. RESULTS

For a detailed account of the results of our field work the reader is referred to Dr. Nutting's Report on Health Work. Here we can give only some of the results as observed from the viewpoint of audio-visual education.

- People have become aware of the dreadfulness of smallpox and have realized the importance of vaccination not only for children but adults as well.
- Trachoma, usually not considered as a serious disease, has become a great topic of conversation among the rural people.
- In general, a wide consciousness of rural health has been created.

8. CONCLUSIONS

- Of all the audio-visual materials we produced, filmstrips and mobile posters are most effective in inducing people to take immediate action toward their health improvement.
- The success of using these audio-visual aids as a means of health education depends largely on the way in which they are presented to the people. The audio part of each programme is absolutely essential.
- Motion pictures will certainly help to arouse the interest of the rural audience and will not necessarily detract from the purpose and function of the filmstrips.
- Enthusiasm, hospitality, and co-operation are always extended to us by the rural people.
- Moral materials, such as dramas, folk songs, demonstrations and exhibits should be developed for future use.

HEALTH DEPARTMENT

by

CLARA A. NUTTING, M.D.

Chief, Health Department

1. Work with the artists, p. 34
2. Field work, p. 36

HEALTH DEPARTMENT REPORT

I. WORK WITH THE ARTISTS

The first problem was how to teach the artists, who had never had any health education, what are the essential ideas to put into a health filmstrip. Smallpox was the topic chosen first, partly because of the local need, and because it seemed a simple topic for a beginning, and because it offered practical possibilities for field work. We soon realized the artists had no ideas of health education in the sense of teaching how to prevent disease; to them it meant telling about symptoms and cures for a disease. So we tried to teach them the cause, methods of transmission, dangers and prevention of smallpox. They had seen pictures of microscopes and of the germs which could be seen through them. But smallpox is caused by a virus, which cannot be seen even through a microscope. We had finally to be content with the explanation that the cause was a sort of poison found in the secretions of a person sick with smallpox, which could easily be transmitted to a well person, who might then contract the disease.

First, all five artists tried working out a filmstrip story about smallpox. The staff would then look through what they had done and make suggestions. I soon realized they did not have enough general knowledge of ordinary health habits to be able to work out a good health filmstrip. We would have to try to combine their skill with our knowledge of health problems and work it out together.

We had to be careful not to criticize too much and thus discourage them. We aimed rather to help them develop their own ideas and to stimulate their initiative. Other problems arose—any story about smallpox would, to them, naturally involve the usual procedure for treating smallpox in the ancient way: one member of the family went to the temple and burned incense before the gods, beseeching them to drive away the evil spirits which caused the disease; or they would invite priests to come to the house, and with their beating of gongs and cymbals, their burning of incense, and their incantations, drive away the evil spirits. These modern young men knew better than all these superstitions, so they ridiculed them. But Unesco cannot make filmstrips showing lack of respect for any religion; it must teach how to help people to understand scientific facts of disease, and that knowledge will gradually drive out superstitious practices. The old farmer who first heard about germs causing disease had the right idea when he said: 'These newfangled notions are just like our old ones—we are afraid of evil spirits which cause disease, they are afraid of germs; we want to keep out evil spirits, they want to keep out germs. What's the difference?' The artists had much else to learn about making filmstrips, so it was a long slow process. But at last the artists' part of the job was done on the smallpox filmstrips and posters.

The next topic was trachoma. Again, to teach the health facts clearly was no easy matter. Most of the artists had heard of it, but after all, it did not seem important, it never caused death and had little relation to them, they thought. Yet, in Top's recent edition of *Communicable Diseases* he writes: 'The importance of trachoma as a cause of human misery, blindness and economic loss,

over much of the world, places it in the forefront of disabling diseases.' A few years ago, an eye hospital in North China was running daily clinics attended by some two hundred and fifty people, in addition to in-patients. When I asked the superintendent who had had many years of experience there, what was the most common cause of these eye troubles, he replied: 'Eighty per cent of all eye cases in North China are due to trachoma and its complications.' Most of that 80 per cent could so easily be prevented, if people understood and would follow the simple health habits to prevent eye infection. How could we make this real to the artists, so they could make their filmstrips express this need to the people?

A blind man and his friend, so nearly blind that his wife had to lead him around, were brought in with five other members of their families. The blind man had white scars all over the corneas which had begun when he had small-pox as a very small child. The nearly-blind man, as a young adult, had had sore red eyes and much irritation, which grew worse as the eyewinkers turned in and scratched the eyeball; then the cornea had gradually grown hazy until now one eye was blind with a thick corneal scar, though in the other he still had some vision. The four members of his family had severe trachoma. We tried to explain. He finally came to the hospital and had the entropion operation, and we hoped that with continued treatment for the trachoma the haziness and scars might clear up enough for him to retain a little vision. (A Chinese doctor in another part of China, who has specialized for years on work for trachoma in rural districts, has found this amazingly successful.) The nearly-blind man and his family were much pleased with the result of the operation, and came back for several treatments, but then disappeared. These cases and a few others helped the artists to express their ideas in pictures, and after various corrections, suggestions and changes, the trachoma filmstrips were finished, as far as the artists were concerned.

We were all learning much, so the next filmstrips on tetanus neonatorum, safe food and safe water, and health habits went more easily. But it was very difficult for the artists to drop their own ideas, start with an open mind to learn something new and then adjust their former ideas to the new ones in producing the filmstrips and posters. For instance, they all knew they should drink boiled water, that is, not drink possibly contaminated water (practically all water in this land) but did they themselves always practise this rule? They knew that flies breed in filthy places and can carry germs, but did they take the necessary precautions so that flies did not bring them disease? Did they practise health habits and thus understand them so that they could put them into filmstrips which would help other people to practise them, not be just entertained looking at them? Health education to the point of getting people to practise it is a long slow process. Even in countries with far more advanced public health services than China's, the consistent practice of simple routine health habits is far behind what it should be.

The arrival in August of Norman McLaren was a great joy to our artists. He was full of new ideas for varieties of audio-visual aids and his quiet friendliness and intense interest in his work were an inspiration to all of us. He knew of course all about making filmstrips, but made a definite point of learning how to adapt his ideas to the needs of health training here. He observed the field work and always tried out different ways in which visual aids could help meet our problems. He taught our artists, too, the importance first of all of keeping in mind the purpose of these visual aids and the needs they are intended to meet.

2. FIELD WORK

2.1 *Smallpox.* The Chinese believe that the early spring is the time for smallpox vaccinations. This is usually the time when most cases of smallpox occur. It is too cold, earlier, in these unheated, airy houses for babies and small children to take off their many layers of clothing. With the first few warm days early in March word came that the country people were asking for vaccinations. We learned that five cases of smallpox had already been brought into our local hospital and that two adults had died of it. Nine other cases had been reported in our own district.

The local county government had large supplies of vaccine. I was most anxious nevertheless to get into the rural field, across the river to Huang Ke Chen, one of the townships chosen for the field work of Unesco. I wanted first to get to know the people, to learn how they would react to different methods of rural health work, to try and understand their needs and to get the smallpox vaccination campaign started in the field at the time when the people would be ready for it. It seemed best to go ahead even with no visual aids.

Huang Ke Chen has a population of 13,518 and is divided into 22 districts. Six or seven of these comprise the market town, which is situated on the Chia-ling River just across from Pehpei. There are a few small villages, but mainly the farm houses are scattered over the hills and valleys from one to five miles from the market town. To the north-west and south-east of the township are two almost parallel mountain ranges. Two small streams wind through the valleys to the river. There are 13 district primary schools, ranging in enrolment from 80 to 600, no higher grade schools. For these the children have to come across the river to Pehpei or go elsewhere.

The Huang Ke Chen Health Centre had a staff of only one doctor and one nurse, running a busy daily clinic. Already, during the late afternoons, over 1,200 children had been brought to them and vaccinated; these were mostly school children, whose teachers or parents knew the value of vaccination for children. We felt however that many people could not come as far as the Health Centre, so we offered to cover the 15 rural districts.

The Health Centre gladly gave us the necessary supplies and vaccine. The township office arranged our schedule, sent a messenger the previous day to announce to the district representative that we would be at the school, sometimes a farmer's home, and to ask him to urge all the people in his district, old and young, to gather and be vaccinated. The township office sent a secretary and the messenger with us to show us the way over the narrow hilly paths of the paddy fields. As we walked past the farm houses where the women and children were busy in the courtyards or saw some of the farmers in the fields, the messenger would ask: 'Have you been vaccinated yet? You'd better come and bring your children and all get vaccinated?' Or suddenly his voice would ring and echo across the valley with: 'Hurry, hurry, old and young, come and get vaccinated at the school.'

We were always most cordially welcomed by the teachers, often the district representative, and sometimes other local leaders. Always some of them were anxious to learn how to vaccinate, and we were glad to teach them, as that was one of our primary purposes in going to these country districts. After we had chatted awhile and drunk the inevitable hot water (these days, in this district, it is seldom tea) they willingly re-arranged benches and tables—near the door where someone sat to register the people, and where they were told to take off the left sleeve and line up. One person scrubbed with alcohol and another used a needle with the multiple pressure method.

Mothers with babies had benches to sit down on. Most children were interested and curious, and did not mind the little scratch of the needle, but a few were terrified. We wondered what wrong stories had been told them to frighten them so. Our genial messenger, Li, became quite a specialist in gently but firmly picking up the screaming child, sitting quietly in a corner, explaining and pointing out how other children did not cry. Gradually the fear departed and interest was awakened; most of those children let us vaccinate them without crying at all.

We made 10 trips, visiting 15 of the rural districts, sometimes one in the morning and another in the afternoon. We did not go if it was too rainy, for then the paths were muddy and the mothers could not bring the babies; nor on market day, about every three days, for then the large majority of the people took their produce to market and bought their necessary supplies. Market days are also social gatherings for these rural folk, and even a few of the women and children occasionally go to market.

Our groups performed 1,965 vaccinations. The Health Centre totalled a few more than that during March and April. Of the total 4,077, 11 per cent were infants, two years old or under. This shows that the people know pretty well the need for vaccinating infants. But there are still some who wait until the second year, and as smallpox is still so prevalent, it is sometimes too late. One four-months infant was brought to the hospital with smallpox, late in the spring and died from it. Eighty per cent of the total vaccinations were of children under 16 years of age. Practically all of the school children want to be vaccinated every year, some of them will try for it oftener if they get a chance, just for fun. Many of the deaths are of adults. Nearly all the adults we vaccinated had not been vaccinated since early childhood, so among these there were a number of positive takes. This means that there is still great need for health education along these lines, and for all the people, old and young, to be vaccinated at least every five years until smallpox is wiped out.

Toward the end of April, we held a similar campaign in our other Unesco demonstration township. This was shorter, for already the local Health Centre had done a goodly number of vaccinations, and the people were busy in the fields harvesting the winter crops and getting ready to plant others.

2.2 *Trachoma*. On 1 September, in the 20th district in Huang Ke Chen, the Unesco Field Team gave an evening programme of filmstrips showing the cause, method of transmission, dangers and cure of trachoma. These were explained by a trained commentator, using a loudspeaker, and the filmstrips were alternated with records of Chinese music. Announcement was made that a doctor and nurse would be at the nearby school next day to examine eyes, and anyone having trachoma could be treated.

This district school had about 150 pupils. The young woman principal was much interested and offered to help. She quickly learned the technique of the trachoma treatment, and we left her the medicine to continue the treatments. We returned each week to help and encourage her. But after two weeks she suddenly had extra special duties thrust upon her, and had no time to give the treatments. So far we have not found anyone to continue them.

Meanwhile, at the market town of Huang Ke Chen, we gave two evening programmes a few days apart, attended by about 400 people. The following morning the township office sent a friendly policeman, who stood a couple of feet from me, keeping the people in line, telling those with no trachoma to leave, those who had trachoma to register, and then go to the next table for treatment. During the course of the morning three of the township officials came over to have their eyes examined and see how we were getting on. During

all our health work in the township the local officials showed a very friendly co-operative spirit, for which we are very grateful. I cannot over-emphasize the help and encouragement that this has been to the people and to us workers.

The first day we examined 601 people, of whom 176, or 29 per cent, had trachoma. But we could find no one to follow up the treatments. The nurse who had volunteered to help had to return to her work. We decided therefore to wait until the middle of October to continue the project. The Mass Education Movement had promised that by then they could assign a full-time nurse to work with me.

By that time too, their special six-weeks' course for training health workers would be finished. In this class there were 40 young women, chosen from the eight townships of this country. Thirteen of them were from Huang Ke Chen. It was agreed that they would give the follow-up treatments for trachoma, and we would help a little in supervising their other work.

On 16 October our Unesco Field Team again gave an evening programme of filmstrips on trachoma, in the open square in front of the township health office. The square is used as a thoroughfare or as side streets, two of the main market streets are on either side of it. Every third or fourth day is market day, and the main streets are full of people.

The first morning after the evening programme, we set up our two tables on a porch in one corner of this square. After an hour we had no patients, so we moved into the centre in full sight of the passers-by on both market streets. From then on there was an almost continuous stream of people coming to look and see. When they learned why we were there, and that we charged nothing, many seemed glad to have their eyes examined. But it meant frequent explaining and inviting or most of them would have watched awhile, then wandered off. Most people seemed pleased when we explained and they accepted when we offered to examine their eyes. A few expressed real gratitude. That first day was our record day with 656 new people examined, 155 of them having trachoma. The following two days numbers fell off, but the fourth day was again market day, and we again had over 600 new people.

We then decided that only on market days would we be in the town to give eye examinations and treatments. The other days there would be the Health Office nurse and the health worker to give the follow-up treatments in the afternoons only. We would use these days to go out to the district schools and develop clinics there which the health worker could follow up. The Field Team gave their evening programmes in five of these districts. The local district official was helpful in getting men to carry the heavy generator and other equipment, and in providing food for us all, and lodging overnight for the team. Three of the districts especially asked for a second evening of pictures. When the team were able to carry with them a small movie machine, the people were particularly interested and happy, as most of them had never seen movies or filmstrips.

At the market town of Huang Ke Chen, during a total of 23 days, over a period of nearly 10 weeks, we examined the eyes of 6,389 people, which was 47 per cent of the 13,518 population of the whole township. We found 25 per cent of those examined had trachoma. Few of them came back for daily treatment, usually less than 60 daily. But there were a few faithful ones, and after three to five weeks of almost daily treatments we had a number of cures. We presented each cured person with a health poster and later with a Unesco Health Calendar, which they all specially liked.

On non-market days we gradually developed examination and treatment centres in nine of the district schools. The nurse and/or I visited each of these centres at least once a week. There were always a few new cases to examine and,

after three weeks of treatments, to re-examine. Theoretically the pupils were on the spot and thus could easily be given the daily treatments. But there have been too many difficulties: two health workers moved away; some of the teachers were too busy to be co-operative; the health workers themselves had very little training and no experience and background for the follow-up work. Then came the change of government. The schools were closed for a few days. Since then many have been irregular, as they lost a number of teachers, who went to take the special short course of training offered by the new régime. Some of our health workers left for this too. But I was amazed and most grateful that they all did as well as they did. The records suggest a number of helpful points. But really only one school showed a systematic record over a long enough period to allow us to quote results. Out of 91 pupils examined:

42, or 46 per cent, had trachoma,

33 of these came back for from 11 to 28 treatments, over a period of seven weeks,

7 were cured, with 14 to 26 treatments each,

10 were nearly healed,

15 showed a definite healing process, and improvement,

1 only showed no improvement.

These figures are too slight to prove anything. But all the records encourage us to feel that this method of cure may be efficacious for a certain stage or for early infection, though not as often for the long-standing advanced cases. We did, however, have one very interesting case which is the exception to prove this rule.

The first step is health education—get the people trachoma-conscious, drill into them the need for individual clean towels and for prevention of infection, get them really to change some of their health habits; otherwise the treatments will not be of much use to them.

Our final records show that of the 13,518 people in Huang Ke Chen township, we examined 9,514 or 70 per cent of the population, and found 2,665 cases of trachoma, or 28 per cent of those examined.

The people were much interested in the evening programmes of filmstrips. They helped the audience to understand about trachoma, its cause, method of transmission, dangers, prevention and cure. As I examined the patients, or as the nurse treated them, we constantly repeated the same simple important points—use individual clean towels to wash your eyes, clean water and clean wash-basin to wash your eyes, no dirty hands nor anything else dirty should touch your eyes. We urged, we warned, we threatened. Often I had someone repeat what I had said, to make sure they understood me; frequently a bystander would speak up and give the answers, sometimes going into detail to explain what he knew about trachoma. As we tried out a few of the visual aids, our first reaction was to realize what a help they were to us, in repeatedly explaining the health facts. How much more interesting and easy to point to a picture of a dirty towel and its effects, and the contrast of a clean one, than to just say it. The people took a special interest in the pictures, as they made the facts much clearer and more real. After a while we often heard about the '21-day treatment'. Even though, in the more severe cases, time proved they had to have more treatments than that, it gave them something definite to work toward.

By the middle of December we decided to turn the work in the market town over to the local Health Office, while the interest was still high and the numbers coming on market days still good. The schools would be closing early in January for the long winter vacation over the Chinese New Year period. Here too, the interest and numbers were keeping up fairly well in several of the

centres. But we were dépendent upon the co-operation of the teachers, the health workers and the other leaders in the districts. We felt it best not to let the interest die a slow death, but to close the work, and give the helpers a rest; we thought that perhaps after the vaccination campaign in March, we might open some centres again, stressing regular return for treatments, and real change of health habits in the care of eyes. The office had been working on several new aids for that part of the work, which would be a great help. So gradually we closed all the Huang Ke Chen centres by the end of December, except one which had been started late.

In the latter half of December, we opened four new centres, in three different townships, all within easy walking distance. These were kept open for four to six weeks, then closed the week before Chinese New Year.

It seemed wise to concentrate first on the trachoma campaign in Huang Ke Chen, with the hope that we would later do a similar campaign in our other Unesco township, Shih Tze Hsiang. A doctor and two nurses of the Mass Education Movement were able to do full-time health work there from November on.

ART DEPARTMENT

by
NORMAN McLAREN

REPORT OF THE ART DEPARTMENT

The audio-visual materials produced by the Unesco China Audio-Visual Project during 1949 fall into five main categories:

1. STATIC POSTERS, WALLSHEETS, ETC.
2. PICTURE BOOKS
3. MOBILE DEVICES
4. FILMSTRIPS AND FILMSLIDES
5. ANIMATED MOVIES

These breakdown further into the following, arranged approximately in order of increasing use of movement and technical complexity:

1. STATIC POSTERS, WALLSHEETS, ETC.
 - 1.1. Simple posters
 - 1.2. Calendar
 - 1.3. Connected pictures
2. PICTURE BOOKS
 - 2.1. Small pocket-size
 - 2.2. Medium or table-size
 - 2.3. Large size
3. MOBILE DEVICES
 - 3.1. Scroll box
 - 3.2. Mobile posters
 - 3.2.1. Wheel posters
 - 3.2.2. Two-way posters
4. FILMSTRIPS AND FILMSLIDES
 - 4.1. Direct artwork on film
 - Black and white originals*
 - 4.1.1. Pen drawing on clear film
 - 4.1.2. Brush painting on clear film
 - 4.1.3. Etching on clear film
 - 4.1.4. Etching on black film
 - 4.1.5. Combinations of above techniques
 - Colours originals*
 - Ink drawing and colour on clear
 - Colour on clear
 - Etching and colour on clear
 - Etching and colour on black
 - 4.2. Photographed artwork
 - 4.3. Photographed actuality
5. ANIMATED MOVIES
 - 5.1. Direct drawing on film
 - 5.1.1. With grid registration
 - 5.1.2. With optical registration
 - 5.2. Photographed drawings on paper

1. STATIC POSTERS, WALLSHEETS, etc.

1.1. Simple posters

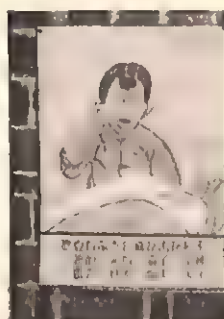
Standard type posters were made on the following topics:

- 1 on safe water—colour
- 1 on trachoma—colour
- 4 on vaccination—colour
- 2 on cleanliness of eating utensils—colour

These were designed on the message-at-a-glance principle and were planned for use in schools, health centres, public places, etc.

They were reproduced by lithographic process, some in black and white, others in 2 and 3 colours; size 38 cm. \times 50 cm. or 15" \times 20".

Two small 'flyers' on vaccination and two on trachoma were produced, 13 cm. \times 38 cm. or 5" \times 15", and also 19 cm. \times 27 cm. or 7" \times 11".



1.2. Calendar

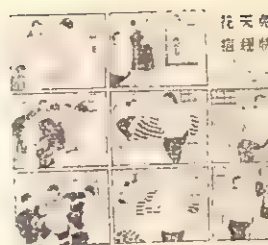
The Health Calendar differed from the standard type poster in that it was designed to be looked at all-year-round rather than on one or two occasions.

For ease and economy of printing, a multi-sheet form was discarded in favour of a single-sheet one. Of the various alternatives of a single picture for each month, or each quarter, or just one for the whole year, we chose the latter. We felt that the function of this picture should be primarily to be attractive, and to adorn the pictureless walls of the country folks' homes, secondarily to teach health ideas, and that it should be rich enough in detail so as not to reveal itself all at one glance, but gradually, with repeated looking.

The topic of our calendar was 'The Healthy Village'; printed by 4-colour lithograph, 3,000 copies, size 38 cm. \times 50 cm. or 15" \times 20". A reproduction will be found as the frontispiece to this book.

1.3. *Wallsheets with connected pictures*

This type of poster used the comic-strip method of a series of pictures to tell a story. As they guide the eye in a regulated order over the visual information, they are probably a more effective visual aid than the message-at-a-glance posters, especially when posted in places where people have leisure to study them.



- Connected-picture posters were made on the following subjects:
- 1 on vaccination, 8 pictures (black and white), size 38 cm. \times 50 cm. or 15" \times 20".
 - 1 on trachoma, 6 pictures (colour), size 38 cm. \times 50 cm. or 15" \times 20".
 - 1 on health habits, 9 pictures (colour), size 38 cm. \times 50 cm. or 15" \times 20".
 - 1 on safe food, 8 pictures (colour), size 38 cm. \times 50 cm. or 15" \times 20".
 - 1 on tetanus, 9 pictures (colour), size 38 cm. \times 50 cm. or 15" \times 20".



2. PICTURE BOOKS

The principle of the book or series of hinged sheets is superior to the wall sheet of connected pictures, in that it keeps information hidden until the correct moment for seeing it; for telling a story through a series of pictures, it can therefore be a more lively and dramatic medium than the wallsheet. It was on the above consideration that we decided to exploit the book as a principle, thinking of its application in a wide variety of sizes, used with and without commentator-operator, and made in single copy or reproduced in quantity.

Our sizes fell into three main categories:

Small (6 cm. \times 11 cm. or 2 $\frac{1}{4}$ " \times 4 $\frac{1}{2}$ "")

Medium (50 cm. \times 75 cm. or 20" \times 30" approx.) and

Large (75 cm. \times 90 cm. or 2 $\frac{1}{2}$ ft. \times 3 ft.)

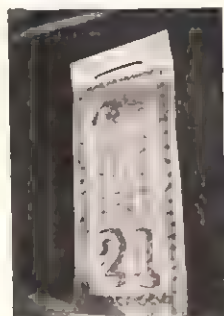
2.1. SMALL-SIZE BOOKS

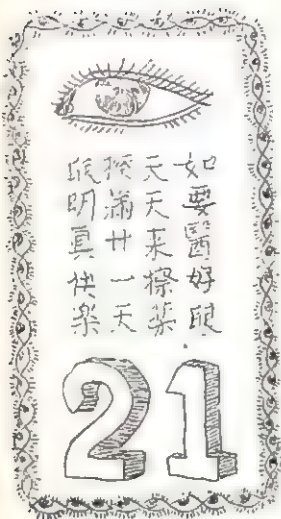
Use. In an attempt to solve a tough problem—how to get trachoma patients to come back daily for treatment—some audio or visual aid was necessary, not just at the scene of treatment, but in the home or away from the scene.

To meet this need we made a small pocket-size picture-story book, to be given to each patient. This did double duty also as a registration card for each patient, and as a system of checking how often the patient came back. The patient was asked to bring it back with him on each visit.

On the front pages were spaces for the patient's name, sex and registration number; the rest of the book consisted of 21 pages with a sequence of pictures telling the story of a patient who came back regularly for treatments and got cured, and of another patient who was careless, forgot to come back and eventually went blind.

Our slogan was: '21 days to be cured, you must come back every day for 21 days.' On each of the 21 pages was an empty space where the date was stamped when the patient came back for treatment.





性別	姓名
年齡	
日期	
號數	



醫生給藥先生和吳先生擦上眼藥

2



第二天早上吳先生起床後能去
擦藥 可是吳先生要等到有空
才去 他還沒睡醒呢！



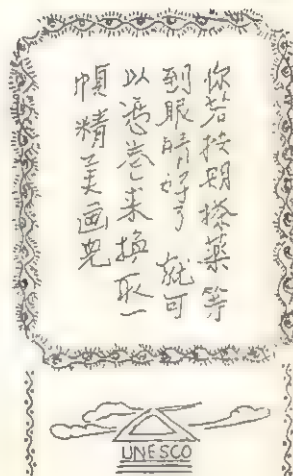
8



某天晚上秦先生覺得他的眼睛好
了 可是吳先生的眼比較老 起來啦！



15



Printed on the last page of the booklet was the sentence: 'When you get cured, you will be presented with a beautiful health poster.'

Production. For speedy and cheap reproduction we used mimeograph. The booklets, being on the flimsy side, were given out in envelopes for protection. Any further booklet along this line, we could be improved by using a slightly larger size, using lithographic reproduction (for the mimeograph pictures are rather thin), and incorporating the written matter in the story, rather than as a caption under each picture. Further, if the series of pictures were printed in orderly fashion on a single sheet, they could be used either as a wallsheet of connected pictures, for posting in public places, or, when cut up and bound, as a booklet for issue to particular groups of people.



2.2. MEDIUM-SIZE BOOKS

Use. These were designed to meet the teaching needs of the doctor and nurse at the scene of examinations and treatments. About 50 cm. \times 75 cm. or 20" \times 30", they were easily portable. The health worker, if busy, tacked them down to a table-top and let the people who were waiting for treatment look at the book themselves. Their size makes viewing possible for up to 20 people, but about half a dozen is the ideal number. They are therefore planned for a situation where there is not a large crowd but a steady trickle of people throughout the day.

When the nurse or health worker was not too busy, she used the picture book too as the basis for a talk to the crowd. Health workers are emphatic in saying such a book is of great value for this purpose. Or a certain patient may ask some question, and the doctor finds that to use the book is the best way of answering.

Construction. Realizing that the book had to be made very sturdy to withstand wear and tear, we made our first one by mounting the illustrations, covered with celluloid, between cardboards and



leaving a large border around each picture for protection. Two stout covers were made for the back and front, and a cloth bag with shoulder tape for carrying the book.

We found this first book on the heavy side for carrying around, and so the next was made by mounting the artist's drawings on one ply of cloth with a cloth border around each picture, thick enough covers to withstand rolling up. This was much lighter and more portable.

Painting actually on the cloth and making the book so that it can be rolled into a cylinder may be an even better solution.

If, however, the book has two stiff covers back and front, it can be stood up easel-style on a table, and thus makes for more comfortable viewing.

2.3. LARGE-SIZE BOOKS

Use. These were primarily designed as day-time substitutes for filmstrip screenings. In contrast to the pocket-size booklets which are for individuals, and for use at no specific time or place, and the medium-size books which are for groups of up to 20 at a specific place but at any time of the day, the large-size books are planned

for audiences of up to 100 or more at a given time or place. Where neither filmstrip nor darkness are at hand, they do the job of the filmstrip.

Construction. The size of our largest book was 80 cm. \times 95 cm. or 31" \times 38". It has several dozen pages made of paper mounted on cloth. On each page was painted a large very bold picture easily seen even from the back of the audience. The pictures were planned and assembled in sequence just like a filmstrip. They were bound and hinged together with two slats of wood.

Special feature. The commentary to accompany each picture was written on the back of the *previous* picture, so that the person who turns the pages can stand slightly behind the book and read aloud the appropriate text. This means that, if necessary, a relatively unskilled attendant, so long as he can read and has a good voice, can operate the book for an audience; in the hands of a trained commentator the written text on the back of the pages serves to indicate which picture is facing the audience and acts as notes for his talk.

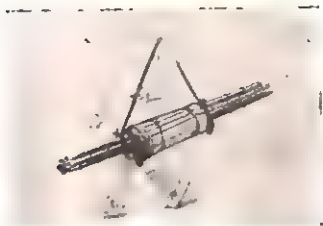
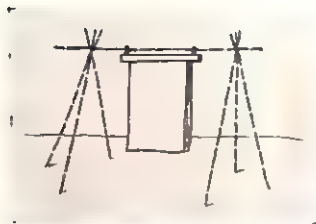
For field showings. To support the book in front of audiences we tried two methods. One was to use stiff covers, which when folded back and tied with tape to keep them from slipping apart, act as an easel. We used this on a 50 cm. \times 75 cm. or 20" \times 30" book.

Another bigger book 80 cm. \times 95 cm. or 31" \times 38" was designed for use in places where there might be no table. It did not have stiff covers but instead had two strips of wood to stiffen the binding; through the wood were two rings through which a long bamboo pole could be slipped so that the book hung from the pole; the pole was supported at its ends by two tripods each made of three bamboo poles (this is the standard method used by housewives in West China to dry clothes). Both tripods were collapsible and the whole outfit folded up into a portable bundle of seven bamboo poles wrapped around by the flexible picture book.

An alternative stand with a roller and two supporting pairs of legs was made for table use. Possible methods are shown overleaf.

At the time of writing, these types of large picture books have not yet been tried out in the field, so no comparative data on their use is available.





A LIST OF PICTURE BOOKS (2) PRODUCED UP TO 24 FEBRUARY 1950.

- 2.1. SMALL BOOKLET on 21-day trachoma treatment, $2\frac{1}{2}'' \times 4\frac{1}{2}''$ (approx. 40 copies still left on 24 February).
- 2.2. MEDIUM-SIZE BOOKS
 - 1 book on trachoma, $12'' \times 18''$, of 17 cardboard pages with pictures mounted under celluloid.
 - 1 book on smallpox, $12'' \times 17''$, with 18 pages of paper mounted on cloth.
- 2.3. LARGE-SIZE BOOKS
 - 1 book on smallpox, $18'' \times 27''$, with 33 pages of paper mounted on cloth, plus front and back wooden boards to act as cover and stand.
 - 1 book on smallpox, $31'' \times 38''$, with 18 pages of paper mounted on cloth, plus a wooden roller and collapsible wooden easel in two parts.

3. MOBILE DEVICES

Experiments in this line were developed on three assumptions, namely that: (1) a visual aid is more effective if it reveals its information in a specific sequence, rather than all at once and unregulated (as do ordinary posters, where the eye is allowed to rove over the details in any order); (2) a visual aid is more effective if it involves something that moves or changes; (3) it is more effective if it involves action or participation on the part of the looker, even a simple action like pulling or pushing something.

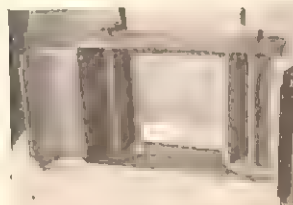
As media, movies and filmstrips meet the first two conditions admirably, picture-books meet the first and third and posters none of these conditions, unless they are in the connected-picture or comic strip style, in which case they meet the first condition.

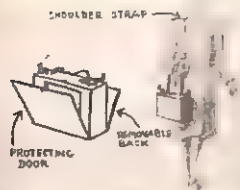
In an attempt to lift the medium of posters out of its static limitations, so as to meet the above three conditions, we experimented with the following mobile gadgets:

3.1. SCROLL-BOX. This is simply an adaptation of the old Chinese idea of a scroll picture.

A long continuous panel of paper or cloth is gradually wound from one roller to another, revealing only a small section of the picture at a time. To make full use of this as a medium, the visual information should be in one continuous unbroken panel, but there is nothing to prevent it from being stated in a series of separate pictures. In the latter case it can differ from such media as books or filmstrips in that the pictures can vary greatly in their proportions one from the other.

The ordinary Chinese scroll is simply made of one or two rollers, very portable, but slightly cumbersome to wind and unwind by hand. To adapt it to fundamental education needs we thought it better to house it, thus making the winding arrangement easy, protecting the rolls, and framing the visible part of the picture. We therefore mounted the two rollers in a shallow wooden box and fitted each roller with a small handle that protruded from the box. The rollers have each a slot for threading up the scroll (like





the slot for picking up the film on a camera spool). A wooden frame fits on the side of the box, to protect the scroll, guide it from one roller to the other, and frame the picture. The back of the box is removable to permit inserting and threading up the scroll.

A small door covers the front when not in use.

A tape, which can be slung on the shoulder, makes the whole box portable.

The box can be made in any size, preferably small enough to avoid mechanical problems and for portability.

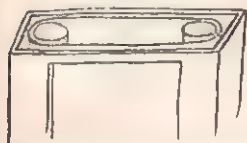
The box can be stood vertically or horizontally, or hung on a wall. Operation with a vertical motion will be smoothest, because of its equal spreading of friction on the rollers.

The box will work admirably if the picture on the scroll is suitable for reading in either direction. But, if the sequence of the visual information flows in one direction, it has a serious flaw. An operator is needed, for the casual onlooker would leave it unwound, and the next person would perhaps be too lazy to rewind it, and would just look at it winding backwards.

Since our field staff could not afford a person to stand by a machine like this all day, and since we considered it very valuable that it be self-operated, we found two solutions.



LOOP SCROLL



Loop scroll. The first was to use the same housing but to make a loop out of the scroll.

This immediately solves the problem of rewinding the scroll to get from the end to the start of the story again. Only one handle is needed, and it can be made to turn in one direction only, so that there is no possibility of the looker winding the story in reverse sequence.

The only disadvantage is that the scroll must then be very short; this can be solved by building the box with many rollers and letting the scroll snake its way back and forth among them. One of the rollers controls the winding.

We did not build a model like this, since there seemed a possibility of mechanical complications and bulkiness, and since the following second solution seemed to have more advantages.

This consisted of building the box with a viewing aperture on both sides, and of painting a continuation of the story on the other side of the scroll. On winding to the end of the first side of the scroll, there is a title reading 'Turn the box round so the other side is facing you, and continue winding'.

At the end of the second side of the scroll another title reads 'To begin the story again, turn the box round and start winding'.

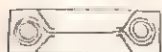
One side was hinged and could be opened for inserting the scroll. The rollers cannot of course be made so that they turn only in one direction; however, to prevent the casual onlooker from picking the scroll up in the middle and winding in the wrong direction, a bold arrow is painted on each front (not the top or side) of the box. If the box is placed on a table backed by a wall, to prevent people from watching both sides of the box at once, the viewing system is almost foolproof and self-operating.

If visual information without specific flow in one direction is painted on the scroll, the box can be placed on a table in the open and a crowd can gather round on both sides, each seeing a different side of the scroll as it is being wound.

SNAKE SCROLL



DOUBLE-SIDED SCROLL BOX



The box we built was designed specifically for the field doctor or nurse to carry with her, and set up at the scene of her examinations and treatments. It measured 36 cm. \times 25 cm. \times 10 cm., or 15" \times 10" \times 4".

A second model of the same dimensions could well be made lighter, especially if made out of bamboo and rattan, rather than solid wood. (Plywood was not available in this part of China.)

We did not have time to build more types of scroll-box, but if this Unesco project continues, we plan to do so and to compare the performance of various models in field use.

Artistic exploitation of scroll-box. The distinctive characteristic of the scroll as a medium lies in its ability to use a long continuous panoramic picture, rather than a series of linked but separate pictures.

If separate pictures are used, it does much the same type of job as a hinged or bound picture-story book, and can be compared with it as to practicability as follows:

A picture book of comparable size, especially if mounted on not too thick paper, is a little lighter, and if painted on sheets of cloth which can be rolled up, is also less bulky and more portable; not in its favour is the fact that it will eventually suffer wear-and-tear through fingering and handling.

The advantages of a scroll-box, we surmise (for we have not had time to see how it wears and tears in the long run), is that it has a sturdy housing, the pictorial part is not fingered during use, and does not suffer the same wear-and-tear as a book; secondly, it can (if not accompanied by a commentator) be set up on a table and viewed from two sides simultaneously.

If, on the other hand, the scroll has a continuous picture rather than a series of connected pictures on it, our result is no longer a practical variant of a hinged book, but a new medium of information in its own right, which can be creatively used for its peculiarities, and which definitely re-orientates the visual presentation of any subject matter.

Many topics can gain by a long unbroken exposition: topics which otherwise would suffer by the cuts and page-breaks found in filmstrip and book presentation; certain aspects of soil-erosion, irrigation system, village planning, transportation problems, and so forth, are surely very appropriate for scroll presentation.

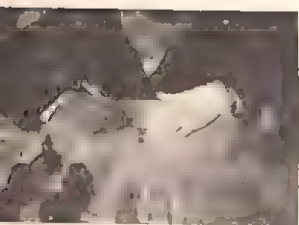
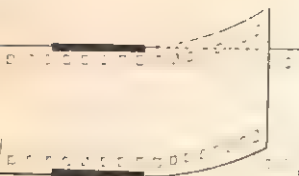
For our first topic we chose the overall theme of our project: "The Healthy Village".

3.2. MOBILE POSTERS

Of all possible ways of introducing movement into flat posters, the wheel, or mobile element pivoted around one central point, is structurally the simplest and most reliable: levers, shutters of sliding elements may more readily develop frictional or mechanical trouble, if not made with great care out of substantial material. But a simple wheel, even if made out of thin cardboard, will work quite well. (In West China, very poor-grade cardboard, often limp with the high atmospheric humidity, was the only thing available and yet wheel posters made of it worked quite well.)

We therefore concentrated in our experiments on the wheel principle of movement, and avoided all other principles.





The right length and side of the film to draw on. The clear film to be drawn upon was measured off about a foot longer on each end than the proposed filmstrip. It was then tested to find out which side was best for working on. (Apply indian ink to both sides, wait for it to dry, and then try to flake or scratch the ink off. Use the side to which the ink clings more firmly.)

Cleanliness of the film. Since this clear film tends to pick up dirt and scratches during work, we taped a second length of clear film to the underside of it, to protect it from dirt and abrasion. This protective film was removed only when all work was completed (for economy's sake it was used over again to protect other filmstrips).

Finger-grease on the celluloid prevents the ink or paint from clinging smoothly to the surface. Wearing white cotton gloves is recommended. (On the other hand, it is possible creatively to manipulate finger grease on the surface before applying the paint in order to create textural effects.)

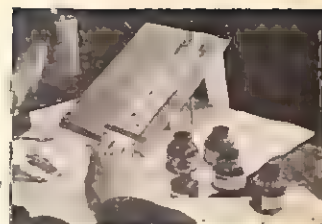
The film was then tacked down to the table-top precisely in place above the strip of paper with the pencil sketches.

When working on black film, initial preparatory sketches were made on paper (in the same way as for clear film) and final ones, if needed, were made by using an ordinary fountain-pen on the black emulsion of the film.

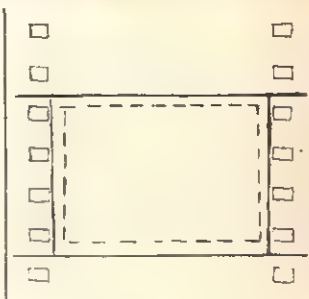


Working without preparatory sketches. When the artists preferred to work directly without sketches, they made a frame-guide by drawing frame lines on the protective film to be taped on the under-side of the clear film.

Easel. As an alternative to working on a table-top a small sloping wooden easel was used. This had a grooved channel through which the film could be slipped and in which it could be held firmly. A countersunk ground-glass panel let the light through from behind; this was particularly helpful when etching on black film or when using half-tone brush-work on clear film. A strip of film with frame-lines was permanently fixed to the glass panel to act as a frame-guide.



Frame size. At first we had trouble in determining the outside bounds of the frame: important details in a drawing were often cut off during projection because they were too close to the edge. On the other hand, drawing the frame smaller was not satisfactory because projectors vary in what they cut off. We therefore standardized the procedure of drawing the picture over the total area, but allowing a margin (the dotted line on this sample) beyond which no vital material should be drawn.



Erasing errors. Mistakes in painting or drawing were wiped off the clear film with a damp cloth, followed by wiping with a dry cloth before re-drawing.

Mistakes in etching on the black film were erased by painting over the wrongly etched part with indian ink and re-etching.

Mistakes in etching on the clear film cannot be erased except by cutting off the offending frame and splicing the film together again.

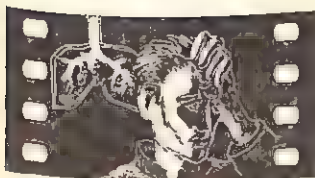
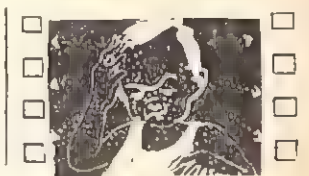


Terminology

In all cases the strip of film which the artist actually works on is called the 'first generation', or 'artist's original' and usually carries a positive image.

From this, by normal photographic printing, a 'second generation' copy is made, which would therefore usually carry a negative image.

From this in turn is made a 'third generation', which carries a positive image; it is an exact duplicate of the first generation except that the image is in photographic emulsion rather than painted, inked or etched.



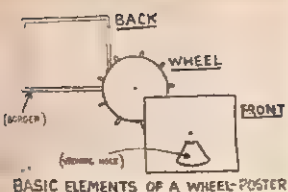
First generation



Second generation



Third generation



3.2.1. Rotating wheel posters

Construction. These were made most simply from three bits of cardboard (in some cases, particularly where the posters were large, the cardboard was supported by a light skeleton of wood or bamboo). The three bits of cardboard are:

- a *back*, which remains stationary,
- a *wheel* in the middle, which rotates, and
- a *front*, which remains stationary, and which has some sort of opening or holes cut in it, through which the rotating wheel can be seen, a little at a time.

Around the outside edge of the back is a narrow cardboard frame or border of the same thickness as the wheel, so that when all three parts are placed together and a nail or pin stuck through the centre, there will be space enough for the wheel to rotate.

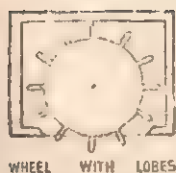
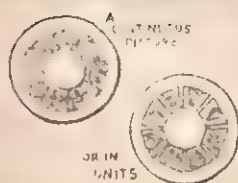
The purpose of the back is simply to protect the wheel and support the frame or border. The purpose of the front is to carry the static or constant part of the pictorial message (if any). The purpose of the wheel in the middle is to carry the movable or variable part of the pictorial message. This message is painted around the wheel, either continuously or in units.

The wheel must have some means of being rotated by hand. We tried several methods, in this order.

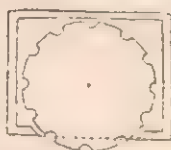
Lobes or small handles which project beyond the bounds of the poster; but these will eventually get broken off, unless made of wood; therefore for cardboard construction small finger-shaped indentations such as these are preferable.

Better still, for withstanding wear-and-tear, are circular finger-holes in the cardboard.

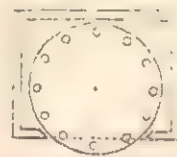
The wheel projecting beyond the edge of the poster may get



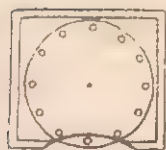
WHEEL WITH LOBES



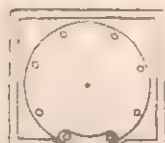
WHEEL WITH FINGER-DENTS



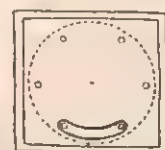
WHEEL WITH FINGER-HOLES



WHEEL INSET IN POSTER



CURVED FINGER-SLOT TO REGULATE PRECISE AMOUNT OF MOVEMENT



FINGER-SLOT ABSORBED INTO BODY OF POSTER

battered and bent, when being carried around by the field worker, so it is better to set it inside the poster, and cut a piece out of the front and back for operating the wheel.

Unless a continuous panorama is painted around the wheel, there will be a need to regulate the precise amount the wheel should be turned between each picture. Carving away the front and back, in a shape that will precisely limit the movement of the finger when turning the wheel, will solve this.

Finally, to incorporate the finger-holes into the body of the poster and cut a curved finger slot out of the back and front for the finger to move along, although it uses up valuable mobile-space, makes for a compact and more wear-and-tear-proof construction.

Applications of rotating wheel posters. The most obvious method is to cut a single hole in the front, and have a sequence of pictures spread around the wheel so that when they pass the hole they will be seen in turn. With a large 'pie-slice' hole it is possible to have only two or three pictures on the wheel; with a narrow 'pie-slice' hole, up to 12 pictures are possible.



6-PICTURE SEQUENCE



3-PICTURE SEQUENCE



SQUARE VIEWING-HOLE
AND HOLE FOR CAPTIONS



CIRCULAR VIEWING-HOLE



12-PICTURE SEQUENCE

Twenty pictures are possible with a very narrow hole, but this is only suitable for narrow vertical pictures.

Though a 'pie-slice' hole most economically uses up the whole mobile area of the wheel, the hole may be cut in any other shape to suit the needs of the subject matter.

The viewing-hole and the finger-holes (if the poster is at all big) should not be kept far apart like this. . . .

but should be close together, as this makes for better co-ordination of all the hand-and-eye movements involved in operating the poster.



VIEWING-HOLE & FINGER-HOLE
SHOULD NOT BE FAR APART IF POSTER
IS BIG, OR AUDIENCE NEW TO DEVICE



CLOSE LOCATION OF
HOLES RECOMMENDED



CLOSE LOCATION OF HOLES
RECOMMENDED



FAR APART VIEWING- & FINGER-HOLES
NOT RECOMMENDED IF POSTER IS LARGE

Complete lack of photographic facilities. For fundamental education areas where no cameras or photographic printing equipment exist and where it is awkward to ship materials to the outside world for printing, the first generation or artist's original should be used for all projection purposes.

First generation protection. The etched techniques are probably to be preferred to the drawn or printed ones, as repeated projections can scratch the colour and ink off painted originals; being rolled up in small tight rolls in cans may eventually flake off the indian ink (though we have no proof of this). The etched originals, however, especially those etched on black, are very sturdy and will stand up to much wear-and-tear, and do not show up dirt and scratches during projection.

The use of the artist's original for projection gives excellent results in colour contrast, definition, and light transmission, considerably better than a normal photographic coloured print.

Colour can be employed to the full, as there are no subsequent photographic processes to condition its use.

A transparent dye suitable for painting on plastic, celluloid or glass should be used. We recommend 'Craftint inks', product No. 234 of the Craftint Manufacturing Co., Cleveland, Ohio, U.S.A. These inks which are transparent dyes come in yellow, orange, red, blue, green, brown, black and 'thinner', all hues of high chroma, which if applied thinly and variously cross mixed will produce intermediate colours of low chroma.

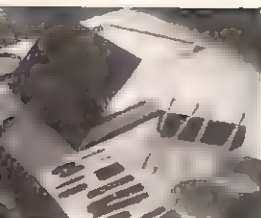
Reproductions of two pieces of filmstrip with bands of colour will be found at the end of this book (see plate I). In printing, of course, the original quality of the material does not show very well.

The pure blue is exceedingly dense, and if used in low-luminosity projection, has to be applied thinly, else it will register without much chroma. The black and 'thinner' seem to be chemically different from the other colours and were not used mainly because the 'thinner' is brown and the black sometimes makes crackled textures when applied to the celluloid.

Lack of colour, but not black and white, photographic printing facilities. In fundamental education areas where black and white but not colour photographic printing facilities are available, a different procedure is recommended.

Third generation projection. The artists should not use any colour in making the original; from this original a second generation copy is made; from this second generation any number of third generation copies are made for projection and distribution purposes.

These third generation copies may then be coloured by hand (using Eastman Kodak transparent water-colour stamps or similar type of colour suitable for painting on photographic emulsion). The film should first be washed in a five per cent solution of household ammonia (or Eastman Kodak Photoflo), and allowed to dry. The film is then best placed on an easel with a glass panel to let the light through from behind. Plate II at the end of the book



gives a case-history for this process: illustrations A and B show the first and second generations; C is the third generation film-strip, part of which has been coloured by hand.

The paint should be applied according to the directions that come with the colours; care should be taken to avoid scratches and dirt on the film by taping a protective strip of clear film on the under-side during colouring.



Additional copies for distant or non-immediate screening when the third generation is used locally. Once a satisfactory second generation copy has been obtained, the first generation may be coloured by the artist (using Craftint or similar ink suitable for celluloid, but not Eastman Kodak transparent water-colour stamps as they are designed for film with photographic emulsion on it).

This coloured first generation copy can then be shipped abroad to a large centre to act as a master from which Kodachrome, Ansco or other colour contact prints are made. This will not interfere with the local needs which are immediately met by the hand-coloured third generation copies; more of which can be made at any time from the second generation copy.

Before colouring and shipping the artist's original, it is advisable to make at least two second generation copies, one for printing from and one or more for protection.

In colouring the original for this purpose, the artist should use a narrow range of light-values, as photographic colour reproduction will increase the contrast of the original.

Local needs also can later be supplied by such Kodachrome, Ansco or other colour prints from abroad, if these are cheaper than prints made by the hand method of colouring. If they are of the same price, however, the hand-coloured ones are to be preferred for their greater luminosity and chromatic brilliance.

Second generation projection. In only one type of technique did we find it better to use the second generation rather than the third for screening purposes, namely, etching on black film with pure line imagery or even with pure area imagery but without light and shade.

If the imagery is done in thin outline on the black film the resulting second generation is excellent for flat colouring. The line has a different quality from pen and ink line on clear celluloid, being finer and more uniform.

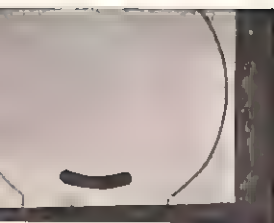
If light and shade imagery is used, the second generation will be a negative, unless the artist has taken the precaution of etching his original with inverted light-values (that is, with negative light and shade).

Plate II at the end of the book gives two examples. The frames on the left (D) are first generation etchings on black; the second generation prints (E) were coloured by hand.

Rotating wheel poster. It is advisable for the artist or the person responsible for designing the mobile device to study it in operation, with a view to making it most suitable for the conditions as well as wear-and-tear-proof.

For instance, on observing our first rotating-wheel posters in operation, we found that although there were clear arrows and numbering to indicate which way to turn the wheel, about 15 per cent of the people turned it in the opposite direction and so got the story in reverse order.

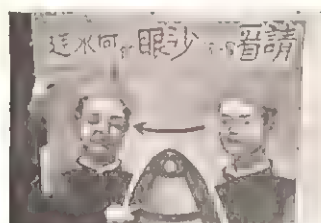
We therefore designed a wooden frame which made the wheel turn in only one direction, and which also regulated the amount of turn between each picture. In the following illustrations, this improvement can be seen applied to another poster.



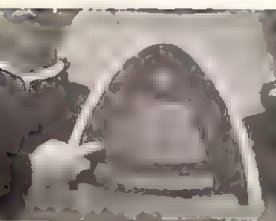
k



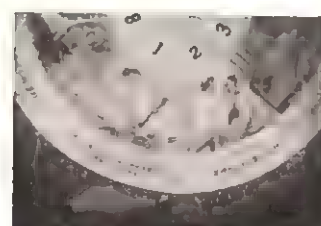
Wheel



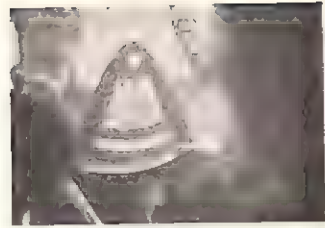
Front



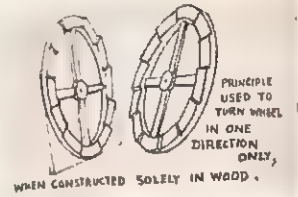
*Picture-number hole
Viewing hole
Caption slot, and
Finger half-slot*



Details on wheel: Picture-numbers, pictures, captions, finger-holes, and direction arrows.



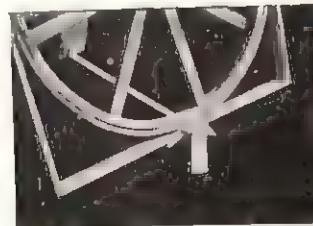
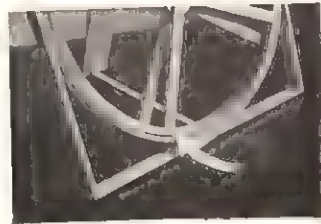
The detailed construction and use of a one-direction wheel poster on trachoma. The principle: the back and wheel with wedge-shaped notches, complementing each other.

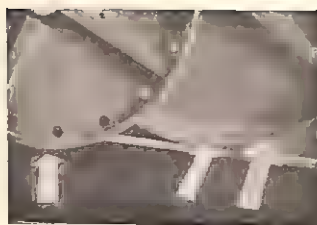
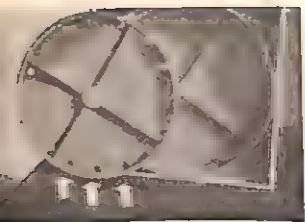


Actual model: the back and wheel in place together.



The wheel can be rotated within the static outer circle.

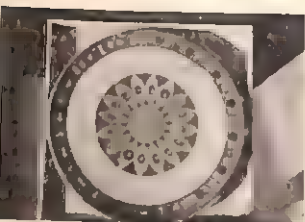




The wheel and back opened apart: small wedge-shaped notches prevent wheel from turning in a clockwise direction.



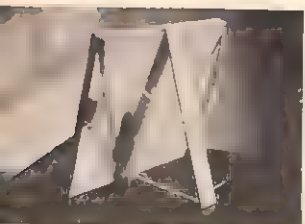
Cardboard has been fixed on the back and on the wheel; around the outer edge of the wheel finger holes have been cut.



The mobile pictorial element painted on the wheel consists of an inner-circle of pairs of eyes in eight different conditions of trachoma infection, a middle-circle of captions describing the state of the eyes, and an outer-circle of numbered fingerholes and arrows.



The front with a caption hole, two eyes and finger slot cut out of it.



A taped strut on the back for standing the poster easel-style; and a shoulder strap for easy carrying.

For carrying to work the health worker ties a cloth around it.



She sets it up on a table and soon gathers a crowd around it.



She uses it to illustrate her talk on trachoma.



When she starts examining and treating people, she leaves it for the crowd to look at and operate themselves.



The eight stages show how with daily treatments bad trachoma eyes gradually improve and become bright and healthy again.



A TWO-WAY POSTER HAS LIMITED ROTATIONAL MOVEMENT

3.2.2. Two-way posters

Principle. These are essentially of the same construction as the rotating wheel type, differing only in that they do not rotate fully around 360° , but simply move back and forth through a small sector of the circle.



POSITION 1



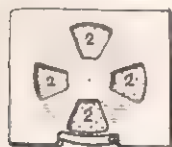
POSITION 2

A projecting area of the wheel comes up against the outside of the edge of the poster and prevents the wheel from turning further. The wheel therefore can shuttle between two positions. A viewing-hole is cut out of the front of the poster to reveal part of the wheel behind: when the wheel is in position 1 a different area of its surface is revealed than when it is in position 2.

Since the wheel does not turn completely round, many viewing-holes can be cut in the front, each of which will reveal a different area of the wheel when it is moved from position 1 to position 2.



SEVERAL VIEWING-HOLES
POSITION - 1



SEVERAL VIEWING HOLES
POSITION - 2

The wheel, since it does not have to rotate fully, need not be circular; in this way more of the total poster space can be used for viewing-holes. The pivot point can also be placed anywhere to give many different possibilities of action.



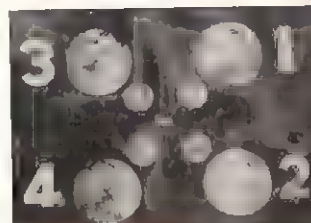
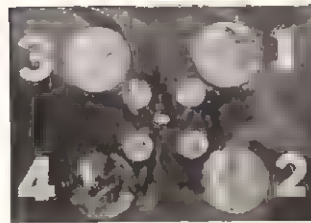
THE 'WHEEL'
NEED NOT BE CIRCULAR

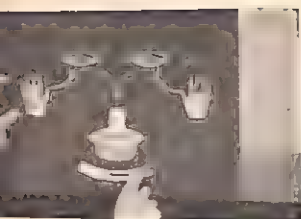
Application. The most obvious application is to convey two alternative and contrasting messages, such as 'Do' and 'Don't' on a certain topic, or 'The good way' and 'The bad way', as in this poster on vaccination, where the message in position 1 reads 'Smallpox can make you pockmarked, blind or dead' and in position 2 reads 'To defend against smallpox get vaccinated at once'.



Another method is to cut out several viewing-holes and number them for viewing in ordered sequence, as for example in this other poster on vaccination, where position 1 shows a 'Don't' sequence and position 2 a 'Do' sequence.

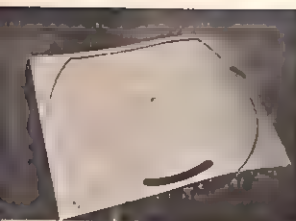
The pictorial part of the poster may exploit a relationship between static matter on the front and variable matter on the wheel as in the foregoing illustration showing the boy with smallpox and the healthy baby; or it may be restricted to purely variable matter seen through the holes; it may also depend largely on





the holes themselves for its significance, as in this poster which points out in position 1 that dirty hands, dirty towel and dirty washing water make for trachoma eyes, and in position 2, that clean hands, towel and water go along with bright healthy eyes.

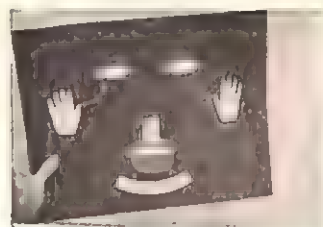
The structure of this type of poster is as follows: The degree of rotation is generally decided by the requirements of the subject matter. A small sector of movement favours the use of many



Back



Wheel



Front

viewing-holes, which are rather small; a large sector of movement favours few but large viewing-holes; the foregoing illustrations indicate this.

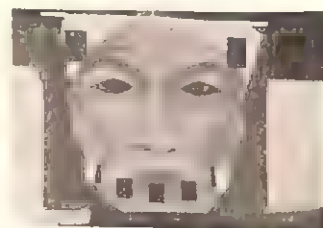
The variable pictorial matter may be painted not only on the wheel but on the *back* section of the poster, the shape of the wheel being designed to reveal it as it turns.



Back



Wheel



Front

In this example it was used as an economy of mobile wheel space (and therefore poster size). It may also be used to give different results in terms of movement from posters where all variable pictorial matter is painted on the wheel.



I didn't come back for 21-day treatment



I did come back for 21-day treatment

Another example:



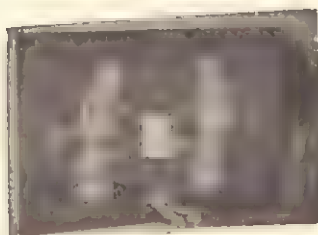
Back



Wheel



Front



Position 1. We all use the same towel—our eyes are bad



Position 2. We all use our own towels—our eyes are good

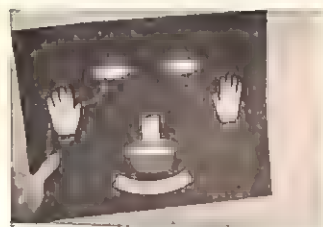


the holes themselves for its significance, as in this poster which points out in position 1 that dirty hands, dirty towel and dirty washing water make for trachoma eyes, and in position 2, that clean hands, towel and water go along with bright healthy eyes.

The structure of this type of poster is as follows: The degree of rotation is generally decided by the requirements of the subject matter. A small sector of movement favours the use of many



Wheel



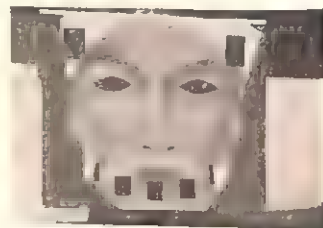
Front

viewing-holes, which are rather small; a large sector of movement favours few but large viewing-holes; the foregoing illustrations indicate this.

The variable pictorial matter may be painted not only on the wheel but on the *back* section of the poster, the shape of the wheel being designed to reveal it as it turns.



Wheel



Front

In this example it was used as an economy of mobile wheel space (and therefore poster size). It may also be used to give different results in terms of movement from posters where all variable pictorial matter is painted on the wheel.

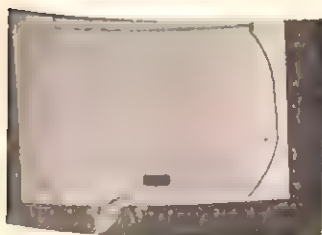


I didn't come back for 21-day treatment



I did come back for 21-day treatment

Another example:



Back



Wheel



Front



Position 1. We all use the same towel—our eyes are bad



Position 2. We all use our own towels—our eyes are good

Planning the lay-out. Care must of course be taken to arrange that none of the wheel areas seen when the wheel is in position 1 are also seen when the wheel is in position 2.

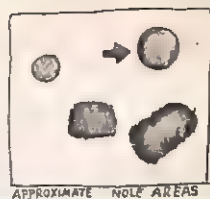
This can best be achieved by the artist's first making a small-scale working model with a couple of sheets of paper; the top sheet having the viewing-holes cut out of it tentatively; a thumb-tack is driven through the sheets at the centre pivot-point and the under-sheet is swung from one position to the other. In each position the viewing-hole area is outlined on the under-sheet in a different coloured pencil. If the top sheet is then taken off, it is possible to see at a glance if the space on the wheel is being used efficiently, and whether there is any overlapping of the two sets of areas. Adjustments can then be made in the amount of movement of wheel and/or the size, shape and position of the viewing-holes.

This trial and error method will get results much more rapidly than planning the poster in the head or on one sheet of paper.

Sometimes a successful poster will involve delicate manoeuvring of the size and location of the viewing-holes, size of angle of movement, and shape of subject matter.



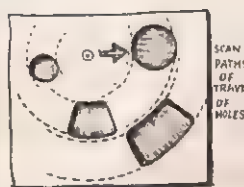
The principles of designing such a poster can be summed up thus:
Decide roughly on the lay-out of subject matter and viewing-holes.



Decide on location of pivot-point.



With this as centre, draw pairs of concentric circles, to delineate the path of travel of any viewing-hole, were it to rotate round the pivot-point.



Decide on size of angle of movement, and shade-in the wheel-surface that will be scanned by the viewing-holes during operation. It is now possible to see how the wheel-surface is being utilized during operation.



To make more effective use of space, or alternatively to avoid overlapping of the scanned areas, adjust angle of movement and/or size and location of viewing-holes.

Once given the above principles, there are a host of possible variations of and uses for such mobile posters.



Applications in the field. In the China Project we designed mobile posters mainly for the doctor, nurse and health worker to carry with her and set up on a table or wall close to where she was examining patients or giving treatments. Thus, they are meant to cope with a small steady day-long stream of people such as is the case in our field work, rather than a large crowd.



We originally planned them as self-operated and self-explanatory devices, but then found that they were most useful to the nurse when she talked on health to the people who came to be examined.

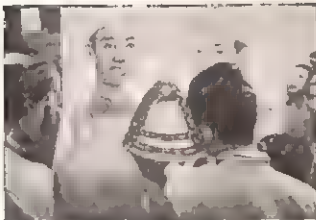
Designed small enough to be portable and yet big enough to be viewed by up to 20 people, we experimented with various sizes and tended to favour the small sizes (about 1 to 2 ft. square) for greater portability and sturdiness.

If used as self-operated devices, we cannot stress enough the fact that they must be excessively wear-and-tear-proof in both construction and material.



Mobile posters larger than table size. For larger posters we made a three-sided collapsible portable stand that held one poster on each side of it.

Where wall-space is scarce or non-existent, this makes it possible to cope with a fairly large crowd in a concentrated area, close to the tables where examinations and treatments are being given.



It was found advisable to have all three posters on such a stand operate by the same principle; in other words, if some were of two-way type and others of the fully-rotating type, some of the people who came to look at them got confused. Better to have them all operate the same way.





Making the mobile device do varied work. If the basic structure of a mobile device (such as the scroll-box, wheel or two-way poster) is built out of wood, bamboo or cardboard, it can be used over and over again to carry different messages. A fresh scroll on a new topic is painted and put in the scroll-box to replace the previous one. For mobile posters new artwork is painted on paper, one part for the front and another for the wheel; this is then tacked or pasted on to the basic structure of the poster.

Reproduction. After considerable actual testing in the field, it is possible that certain types of mobile devices would prove themselves worthwhile for fundamental education purposes, and their designs and dimensions could be standardized. It would be possible to mass-produce the basic structure out of, say, corrugated cardboard, and then mass-print posters (on flat sheets of paper in the usual way) designed to be pasted on the basic structure.

LIST OF MOBILE DEVICES (A.3) PRODUCED UP TO 24 FEBRUARY

3.1.1 WOODEN SCROLL-BOX

3.2.1. *Wheel posters*

2 large eight-stage wheel posters on trachoma, each 27"×37". (One poster shows story on trachoma with happy ending and the other poster with unhappy ending.)

1 wheel poster on trachoma, 21"×21", showing eight different stages of trachoma eyes. (This poster is mounted on a wooden frame that makes the wheel rotatable in one direction only.)

1 small wheel poster on trachoma, 14"×18", showing eight different stages of trachoma eyes (rotatable in both directions).

3.2.2. *Two-way posters*

1 Two-way poster on trachoma, 20"×25", showing in position 1, dirty eyes, dirty hands, dirty towel and dirty wash basin; and in position 2, clean eyes, clean hands, clean towel and clean wash basin.

1 Two-way poster on trachoma, 14"×18", showing in position 1, dirty eyes, hands, towel and wash basin; and in position 2, clean eyes, hands, towel and wash basin. This poster has wooden easel-type stand to support it.

1 Two-way poster on trachoma, 15"×21", showing in position 1, four people with trachoma eyes sharing a common dirty towel; and in position 2, the same four people with healthy eyes, each holding his own clean towel.

1 Two-way poster on smallpox, 20"×28", showing in position 1, a baby exposed to smallpox radiating from another child; and in position 2, the same baby being vaccinated and being protected from the smallpox by a shield.

1 Two-way poster on smallpox, 12"×14", showing in position 1, four stages of an unhappy story; and in position 2, four stages of a happy story.

One three-legged collapsible wooden stand designed to hold three posters of size 27"×37".

1 Two-way poster on trachoma, 27"×37", showing in position 1, bad eyes with the caption, 'I didn't come back for treatment', and in position 2, good eyes with the caption, 'I came back for 21-day treatment'.

4. FILMSTRIPS & FILMSLIDES

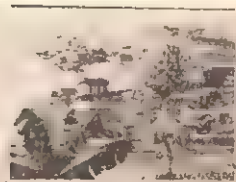
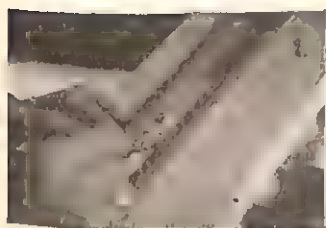
4.1. DIRECT ARTWORK ON FILM

This is a non-standard method explored in detail by the China Project. No shooting camera is necessary; the pictures are done directly on 35 mm. motion-picture film. This film can be procured from Eastman Kodak or other movie film dealers and is technically known as 'machine leader'. It comes in either clear transparent film with no emulsion on it or coated with a heavy black emulsion. There are several gauges or thicknesses; No. 3 of medium thickness is recommended. Safety or acetate leader is to be preferred to non-safety or nitrate leader, as the latter is highly inflammable. When ordering, the following should be specified:

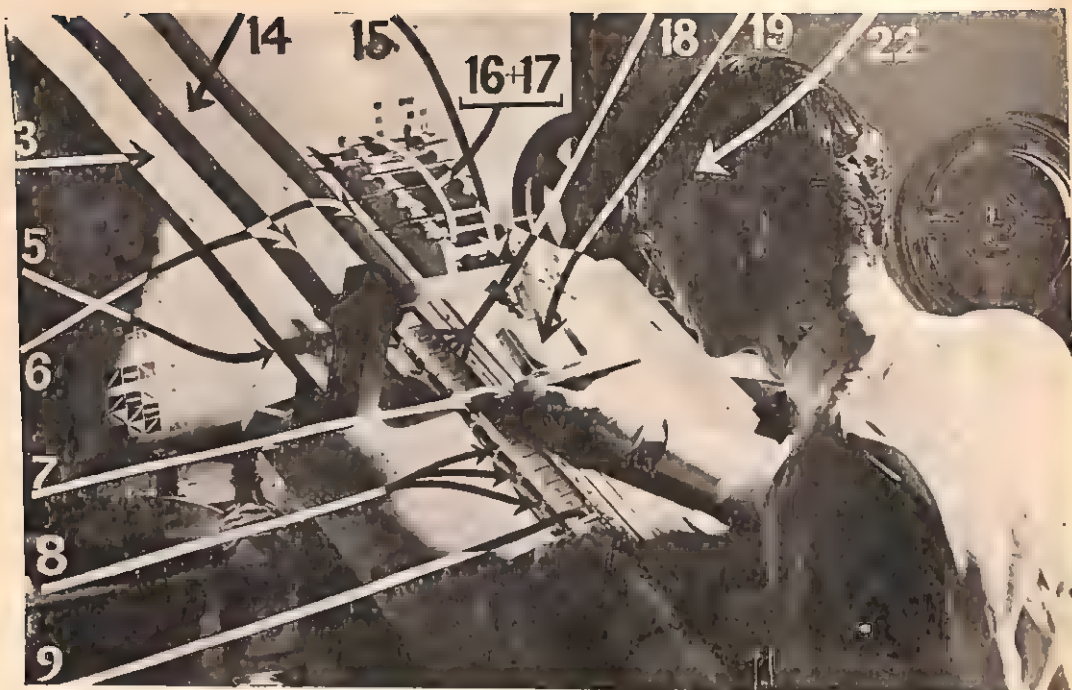
1,000 ft. (304.80 metres) No. 3 Eastman Motion Picture Safety Leader 35 mm. with Bell and Howell perforations.

Pictures were made on both the black and the clear film by two basic methods:

1. Applying ink, paint or colour to the film with pen or brush (*drawing and painting*).



Three examples of this technique and typical frames produced



and go through it again, this time drawing the second most vital element, and so on, until in the last run-through of the film, the artist only fills in the most static or unimportant details in each frame.

If mistakes are made they can be rubbed off the film with a damp cloth; the spot should be wiped dry before it is drawn on again.

Owing to the small scale of drawing, and the continuity in drawing one frame after the next, the artist can easily train himself to rely greatly on muscular memory in his hand to secure steady registration of the image from frame to frame, particularly if he does not stop between one frame and the next, but boldly draws as quickly as possible-down the whole 24 frames at once. In this way he can vividly sense the movement which he is creating.

22. *The artist will find that*

the small scale on which he is working will force him to simplify all his shapes, images and symbols. This is a real advantage and it should be encouraged. It will force him to make his point primarily by means of the movement, action and gesture itself, and only to a very small extent to rely on static characteristics in his drawing. In this way he will turn out something that is cinematically interesting.

23. *Cleanliness*

is important. A pair of thin white cotton gloves will keep grease and dirt from the film. The ink will not cling to the film if there is grease on it. The room where the artist is working should be clean and dusted, especially the drawing table, and board, and the bin into which the finished film falls.

24. *The finished film that drops into the bin*

is the equivalent of an original picture negative in normal procedure. When finished it should be gently and carefully rolled up, and sent to a laboratory for a regular print. The print will have a white line image on a black ground (the opposite of the artist's original which was black line on a clear ground). Except for movement tests (which the artist may wish to make), the original should *never* be screened; only prints should be projected.

For Black and White release prints, either the white image on a black screen can be used or the black image on a white screen. In the latter case release prints are made, not from the original, but from the print from the original; in other words, the 'third generation' is used.

For Colour release prints there are many possibilities. The principle behind most of them is that prints or dupes of the black and white original are used as separation negatives in any colour printing process that uses a separation process such as Cinecolor or Technicolor. 16 mm. Kodachrome prints can then be made by reduction from 25 mm. colour master.

For filmstrips in colour, the artist can paint with coloured transparent dyes or inks straight onto the original, and this can be reproduced onto 35 mm. Kodachrome release prints.

The above is the simplest and cheapest way to make animated movies, but there is a more accurate though more expensive gadget to replace the registration strip of the above method.

25. *Special optical device for registration*

The diagram shows an optical device which can be used for frame registration when making hand-drawn animation. This is an alternative method to the registration strip of 24 frames. Its purpose is to throw a faint image of the frame just completed by the artist onto the frame which he is about to draw.

The film is held in an adapted camera-gate which, by the turning of a wheel, can move the film forward one frame at a time.

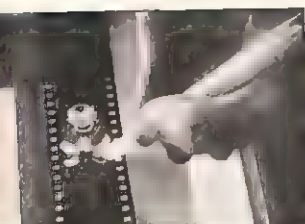


2. Removing the black photographic emulsion (also ink, paint or colour applied to the film) with a stylus, knife or other sharp implement (*etching and scraping*).

Cross combinations of these methods produce a further variety of mixed technique.



The artist at work with etching technique



Three examples from filmstrips produced by this method—the first on clear, with ink rubbed in, the other two by etching on black.

Production Method

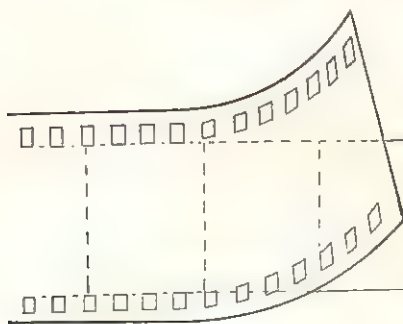
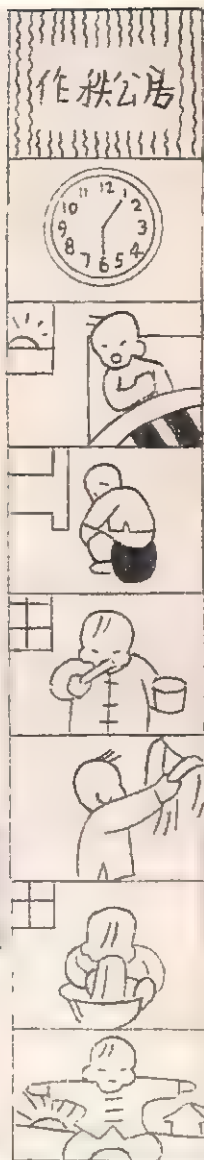
Preparatory sketches. When working on clear film, for preparatory sketches, a long strip of paper was used (adding-machine paper is very convenient) on which was drawn a series of small frames, identical in size to filmstrip frames.

Within the frames thus prepared, rough or final sketches for the filmstrip were drawn in pencil.

During the initial stages of discussion, when frames required to be changed, added or subtracted, the paper was cut and taped together again.

It was found at no time a good idea to do preliminary sketches on a scale larger than the final 35 mm. film, as this tended to develop visual ideas not suited to the final medium.

When the final sketches were completed the strip of paper was tacked down to a table-top.



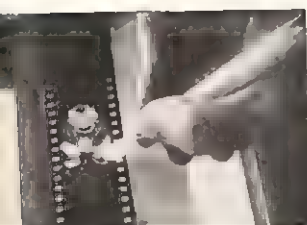


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Production Method

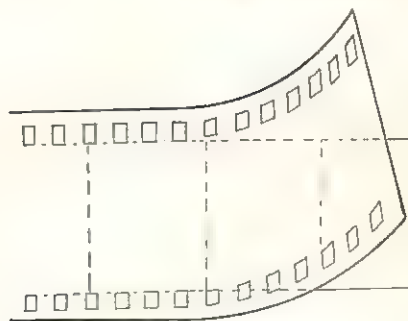
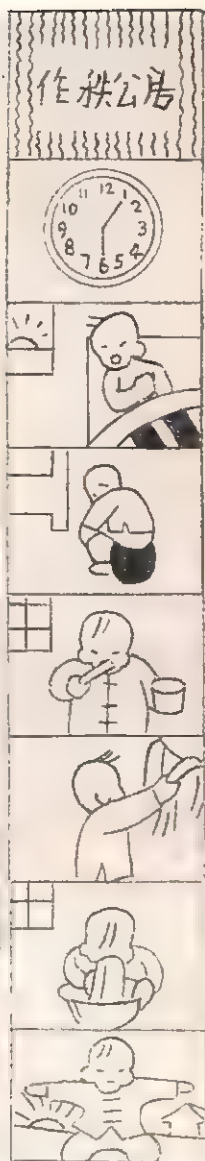
Preparatory sketches. When working on clear film, for preparatory sketches, a long strip of paper was used (adding-machine paper is very convenient) on which was drawn a series of small frames, identical in size to filmstrip frames.

Within the frames thus prepared, rough or final sketches for the filmstrip were drawn in pencil.

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It was found at no time a good idea to do preliminary sketches on a scale larger than the final 35 mm. film, as this tended to develop visual ideas not suited to the final medium.

When the final sketches were completed the strip of paper was tacked down to a table-top.



Additional copies for distant or non-immediate use when the second generation is used locally. The best hand-coloured second generation copy should be sent abroad to serve as a master from which to make Kodachrome, Ansco or other colour photographic prints. This will not interfere with local needs which are met by making further second generation copies from the original.

No lack of colour photographic printing facilities. If a fundamental education area can process its own coloured film photographically or is in reasonably close contact by air with a centre that does, and if, because of bulk ordering, such a colour photographic process is cheaper than the local hand-colouring method, then the first generation or artist's original should be done in colour (using Craftint type dyes) and shipped to such a centre for contact printing.










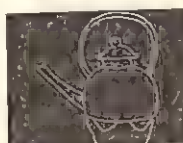


The colouring should be held down to a narrow range of light value to allow for subsequent increase in contrast due to photographic colour reproduction.

It should be remembered that photographic coloured prints will give less light transmission and less chromatic brilliance than third generation black and white ones that have been hand-coloured.

Examples of Various Direct Techniques

Because of the foregoing printing and screening considerations, the direct techniques are best divided into two groups, those in which the artist does the original in black and white (to be coloured later), and those in which he uses colour or in which colour is an intrinsic factor in creating the imagery on the original. The first group caters for the needs of fundamental education areas which have facilities for making black and white photographic filmstrip prints. The second group caters for areas that have no photographic apparatus of any sort, or else are in easy contact with centres that do make photographic colour prints.

Some of the more useful techniques of the first group are tabulated below:

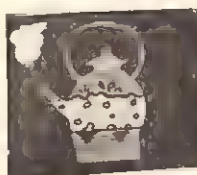
No. of technique	Name of technique	Materials used	Graphic treatment		
			Linear	Area	Light and shade
4.1.1.	Drawing on clear	Pen and indian ink on clear film			
4.1.2	Painting on clear	Brush and indian ink on clear film			
4.1.3	Etching on clear	Stylus or knife (ink rubbed into lines afterwards)			
4.1.4	Etching on black	Stylus or knife			

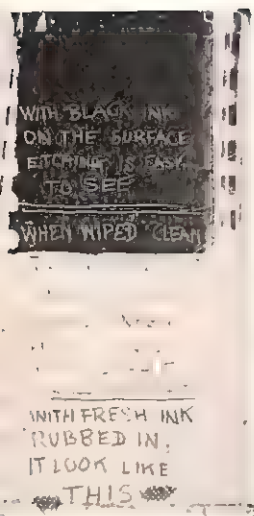
The following are some examples of mixed techniques:

Etching on black plus pen drawing on the resulting clear, on both sides.

Etching on black plus etching on resulting clear, on both sides.

Painting on clear plus etching on the resulting painted areas.





The techniques of the second group (which use colour on the first generation) are so varied and so frequently use combinations of drawing, painting and etching, that it is difficult to classify them systematically. A few examples are as follows:

Indian ink pen drawing on clear film, then colouring with Craftint type dye. As coloured illustrations cannot be printed on this page, the reader is referred to Plate III at the end of the book—the frame A.

Etched with a stylus on clear, then colouring with Craftint type dye. See Plate III, frame B. To see more clearly during etching, first coat the clear film with indian ink; the etching will thus show up clearly as white lines on black. When finished etching, wash ink off with a damp cloth, then colour with dye. If no colour is required rub fresh indian ink over the surface, and when partly dry, wipe off with sufficient gentleness to clear the unetched areas, but to let the ink remain in the etched lines. This will increase the general contrast.

Painting with colour on clear. (Craftint type dye applied with brush, cloth and finger.) For an example see Plate III, frame C.

Etching on black, then colouring with Craftint type dyes. (If large areas of black are to be removed without having a scratched texture or sanded effect on the resulting clear film, the emulsion should be thoroughly dampened and very gently removed with something blunter than a knife.). See the two examples marked D on Plate III.

Etching on black, then colouring with Craftint type dyes, then further etching on the dyed areas. See Plate III, frames E and F.

Indian ink pen drawing on clear, then sandpapering of reverse side and colouring reverse side with Craftint dyes. For this, see frames G and H on Plate III.

(This produces a texture rather like canvas. Sandpapering the surface, however, greatly lowers the light transmission of the original film and is not to be recommended when there are problems of low projection luminosity, if the original itself is to be screened.)

Indian ink pen drawing on clear, then sandpapering of reverse side, then colouring of reverse side with Craftint dyes, then perforating.

In our China Project we did not try out each of the foregoing techniques systematically for we only began to discover the many possibilities as we went along.

At first we made several rather crude strips by painting directly on clear film with indian ink and colour (filmstrip Nos. 001 to 004). We used the artists' originals for field screenings. We were satisfied with the rapidity with which they could be turned out, but not with the fact that there was only one coloured copy of each which would eventually be worn out, so we tried making black and white second generation. From our point of view, these were not too satisfactory because the black and white rendition of the coloured original tended to decrease the intelligibility of the image and the overall light transmission of the film.

(The hand-colouring of a low-contrast, thin-density, black and white second or third generation copy from a coloured original can make for very beautiful and subtle colouring, but is not recommended unless high projection luminosity is available.)

Latterly, we concentrated on making black and white originals by pen drawing on clear or etching on black, with a view to hand-colouring the third and second generation respectively.

A list of the specific filmstrips grouped according to technique is as follows:

4.1.1. *Drawing done with pen and black indian ink on clear film for third generation hand-coloured copies—filmstrips Nos. 005, 006, 009, 009a, b, c and d, 011, 012, 013, 014, 015, 016, 018, 025, 027a.*

4.1.2. *Painting on clear film with a brush and indian ink for third generation black and white copies. In contrast to the other techniques which produce images in pure black and white, this method gives half-tone light and shade—filmstrip No. 017, which makes use of Chinese landscape style.*

4.1.3. *Etching with a stylus on clear film and then black ink rubbed into the etched lines for third generation hand-coloured copies—filmstrips Nos. 019, 022, 027b. Filmstrip No. 027b should be compared with 027a with which it forms a pair as far as subject matter goes, but which is done by painting on clear.*

4.1.4. *Etching on black film with a stylus or knife for either second or third generation hand-coloured copies—filmstrips Nos. 007, 020, 021, 023, 024. Filmstrip No. 020 should be compared with No. 018 as the subject matter is identical, but 018 was painted on clear and 020 etched on black.*

4.1.5. *Colour used directly on the original for projection of the original—filmstrip Nos. 001, 002, 003, 004, 010.*

Direct Methods Applied to Filmstrips

All the foregoing direct methods can be applied to filmstrips. At the moment of writing, we had made some of the title frames of our slidefilms by this method, and one slidefilm, *No. 026*.

This is in two versions *026A* and *026B* from the same original: *026A* was etched in pure line on black film, and hand-coloured second generation copies used for projection; *026B* was made by the artist taking the original of *026A*, after the second generations had been made, and, by further etching, making the pure-line imagery into light-and-shade imagery, and colouring it, he thus produced a colour original to serve as a master for photographic colour printing. These two versions of the precisely same subject matter were made with a view to comparing the effectiveness of a pure line rendition as against a light-and-shade rendition. For examples of titling and of these two slides, see top of Plate IV.

In making slides, apart from the larger size of frame, the production techniques are the same as for filmstrips.

The artists' originals for 35 mm. slide purposes are best done on one continuous strip of celluloid, rather than on separate frames of celluloid. The negative and prints should also be made on one continuous strip; only at this stage are the prints cut up and mounted as separate frames.



Evaluation of the Direct Method of Making Filmstrips

Disadvantages. The chief disadvantage is the limitation to finesse and control of detail in the drawing of any particular frame. With work done on clear film, the ease with which the original can pick up dirt and scratches is also a disadvantage. This is not so much the case with work on black emulsion-coated film.

Effect of direct method on time taken to produce the filmstrip. The time taken to make a filmstrip by this method varied from about a quarter to a tenth of the time by the standard method (average about a seventh).

In other words, the same idea executed by painted drawings to be photographed that took six weeks to carry out would take about six days if translated directly on film.

Our fastest production time was *No. 011*, an 84-frame filmstrip made in one and a half days; our slowest *No. 023*, a 64-frame strip made in six days.

Advantage of first generation projection. The use of the first generation for screening gives considerably better results in black and white contrast, coloured contrast, definition and light transmission than the normal photographic print. Chromatic brilliance and contrast is higher than in the normal photographic coloured print to approximately the same extent.

Therefore, for fundamental education purposes, where low-projection luminosity is normal, first generation projection is very valuable. This is also true of hand-coloured high-contrast third generation copies as compared with photographic coloured prints.

Effect of Direct Method on Graphic Style

If done directly on film, the drawings tend to be much simpler, which is frequently an asset, as when the artist is restricted to working on such a small scale, he tends to draw only the essence of the idea, and therefore states the significant point of each drawing more forcibly than if couched in much detailed imagery including trivia.

It was found that a great amount of detail, much more than at first thought, could be packed into a single movie-frame size of 35 mm., especially by the etched method. This is of course doubly true for the slidefilm size of frame.

Although many themes are unsuited to the direct-on-film method, there are a great many ideas which can be selected for their adaptability to this technique. We tried to select ideas bearing in mind the particular method by which we planned to execute them on filmstrip.

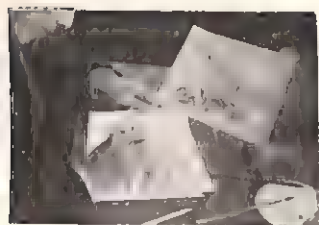
Effect of Direct Method on Planning Sequence of Frames

Because of the small working area of the frame, it is a good idea to break down any given idea into as many of its sub-units as possible, and state them in a sequence of frames rather than on a single frame. An idea which by the photographed artwork method would tend to be stated in one frame, might be stated by three or four frames by the direct method. More often than not this is an advantage, improving the clarity and force of the idea and exploiting the value of the filmstrip as a medium.

Incidentally it was thought a good idea to adopt the same procedure used in planning direct strips, for planning the standard type of photographed filmstrip (painted paper sheets of a much larger size). The small-scale sketch, because of its limitation on the amount of detail that the artist can put in, helps to keep his thinking and visualizing to the essential story-line.

In other words, if you are planning to do a filmstrip by the standard photographing of 8" x 10" artwork, why not make a rough sketch of it on an actual strip of 35 mm. film which you can project to give you an idea of what the final filmstrip will look like? Chances are that if you have artists who work well on the small scale, you may finish up with a filmstrip made by the direct method.





4.2. PHOTOGRAPHED ARTWORK

This is one of the standard methods of making filmstrips and the general technique of it does not need stating here. We made the following filmstrips by this method:

No. 1	The Twins (Smallpox)	24 frames
2	Sao Sao's Story	27 frames
3	Hsiu Lien's Romance (Smallpox)	31 frames
4	Wang San's Eyes (Trachoma)	33 frames
5	What Teacher Said (Trachoma)	25 frames
6	Our Eyes (Trachoma)	47 frames
7	Chang Lin—How He Got Trachoma	27 frames
8	Regrets (Trachoma)	38 frames
9	Safe Water	27 frames
10	My Family Village (Safe water)	44 frames
11	Little Wang Eats Watermelon (Safe food)	43 frames
12	Fly and Food	37 frames
13	Health Song	
14	Health Habits of School Children, I.	
15	Health Habits of School Children, II.	
16	The Healthy Student	36 frames
17	Tetanus of Newborn Infants	72 frames

These were all photographed in black-and-white and subsequently coloured by hand. The majority of them are in outline-and-wash style.

Operating Illusion of Movement in a Filmstrip

In filmstrips No. 13 and Nos. 009, 009a, b, c and d, 'Good Habit Song', we tried out an idea that may not be new but which might well be developed more intensively—the creating of the illusion of movement by a rapid flicking from one film to the next.

The essential principle is stated here again, for, although we did not thoroughly experiment with its possibilities, we feel that, if tested and exploited carefully, it is capable of valuable use in filmstrips.

Assuming that two adjacent frames of a filmstrip have identical images on them, if the projectionist flicks *quickly* from one frame to the other the audience will notice only a slight flicker and imagine that they are still looking at the same frame. Now, if instead of two perfectly identical frames we have two frames that are almost identical except for one small detail, when the projectionist flicks quickly from one frame to the other, the audience will get the impression that the one small detail has moved in an otherwise static picture. Take, for instance, two adjacent frames with the identical picture of a man sitting at a table; in the second frame the position of the man's arm only is different; a rapid flicking back and forth from one to the other will produce the impression that the man's arm is moving.

For the success of the effect, it is essential that the greater percentage of the frame be identical and the lesser percentage variable. The optimum proportion between the static and variable percentages is a matter for further research; but obviously if one increases the variable percentage gradually, a point will be reached where one will read the frame-change not as a flicked movement within

one frame, but as a switch from one frame to an entirely different frame.

Since the illusion is caused by the persistence of vision on the retina of the eye, another matter for research is the distribution of illumination. For instance, is it more effective to have the variable area light and static area dark, or vice versa? Should the general background area be dark or light, especially in the region where it touches the frame-line? What is the optimum amount of movement?

Unfortunately, at the time of writing, we have not had time to carry out such research; however, we made two strips using this principle, one done by the direct method of painting with ink on clear celluloid (4.1.1), filmstrips Nos. 009a, b, c and d, and the other done by the photographing of ink line-drawings on white paper (4.2), filmstrip No. 13.

At the time of writing, we have not yet compared these two, but in theory the latter should be more successful, for, since the drawings are done on a large scale and photographed, greater accuracy of registration of the static part of the image is possible. However, the artist used a dry-brush line style and the static parts of the image are therefore not precisely identical in adjacent frames; if he had used a clean black line that was precisely registered on itself from frame to frame, the illusion of movement would have been more perfect. The slightest fluctuation of image in areas of the frames that are supposed to be static will interfere with the illusion.

Projection of Flick-frame Filmstrips

In screening, it is essential for the projectionist to make very quick frame changes.

The question came up in our 'Good Habit Song' filmstrip, where repeated actions occurred, whether to reverse the direction of the filmstrip through the projector, that is, to flick it back and forth between two adjacent frames, or to achieve a repeated action by printing two frames over and over again a-b-a-b-a-b style.

We chose the latter as it does not depart from the standard method of showing a filmstrip; in our particular filmstrip we thought it necessary to have instructions to the projectionist at the head of the filmstrip, and advise him to practise the frame-change before screening it to an actual audience. This need not necessarily apply for many types of filmstrip using the movement-illusion principle.

4.3. PHOTOGRAPHED ACTUALITY

This is a standard method of making filmstrips or slides and is represented by our set of filmstrips on:

'Trachoma Campaign in Huang Ke Chen'

'Vaccination Campaign in Huang Ke Chen'

'Dishwashing and the Prevention of Typhoid-dysentery Infection'

'See Yourself' FilmSlides

One very valuable use of photographed actuality was the taking of pictures of the village folks themselves taking part in a campaign, attending meetings, being examined, getting vaccinated, and so on. These were then projected in slide form at evening screenings.

People like to see themselves and their friends in photographs on the big screen; it draws a big crowd and creates a warmth of interest. If at the same time they see themselves taking part in some health campaign a double purpose is served.

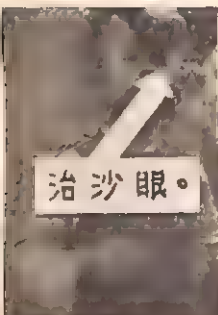
We used a Leica camera; from the Leica negatives we made transparencies by contact printing; we had them hand-coloured by the method previously described, using Eastman Kodak or similar type transparent water-colour stamps, and made slides out of them. These were edited in as logical and interesting a way as possible and, during projection, were accompanied by a commentator, using a local colloquial approach. In addition to the examples printed here, two coloured slides are shown on the lower part of Plate IV at the end of the book.

Examples of this use of actuality filmSlides are our 'Trachoma Campaign in Huang Ke Chen' and 'Vaccination Campaign in Huang Ke Chen'.

Mixed Techniques in Slidefilms

It is possible to combine direct artwork with photographed artwork or with photographed actuality. The photographed print (or negative) may be dampened and certain areas of the frame scratched off with a knife: on the scratched area wording may be written with pen and indian ink. This may be particularly useful on actuality frames: arrows may be added, sections of the frame eliminated, images in the frame outlined and so on.

In the case of filmSlides, actuality frames may be interlaced with direct artwork slides. Our filmSlide on 'Dish-washing and the Prevention of Typhoid-dysentery Infection' shows the use of these different techniques; the titles were etched directly on black film while the pictorial matter was both photographed actuality and photographed artwork.





FOREWORD

Compared with the foregoing four categories of audio-visual aids, movie production and screening involves a great deal more technical complication, time and expense; so much so that from our experience here in West China it is appropriate to ask whether it is advisable to consider its use at all in certain areas where facilities are lacking. Its great asset of movement can easily be found in many older, traditional and technically less cumbersome media.

Our project did not have the time or staff to try putting these older techniques to use, but we have seen performances of semi-didactic political songs, dances, mimes and plays put on by school students and clubs in celebration of the new régime which made it quite apparent that these media could be harnessed for the teaching of health ideas. In a country where there seems to be a wealth of talent for acting, singing and the like, and a great dearth of motion picture photographic, developing, printing and projection apparatus and stable electric supply, it seems only sensible to discard the idea of movie production in favour of the more intimate and technically simple substitutes. This statement is really putting the cart before the horse, for in this case it is really the movies that are the ersatz substitute for other more natural media.

If a region does not have any traditional media for communicating stories or ideas in movement (which is unlikely), it may be more effective to spend time planning and teaching such media than to introduce movie production, laboratory and projecting facilities.

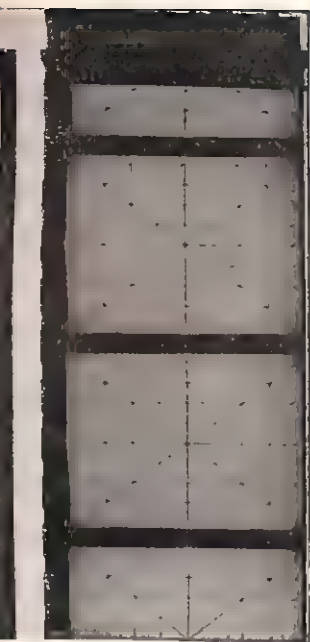
In the West where machines are plentiful, mechanical means of disseminating ideas may be much more economical than a direct human means. In technically backward areas, where people are plentiful and machines are scarce, mechanical means of disseminating ideas are generally much more costly than the simple human means.

Animated Materials Produced by the West China Project

In the West China Project, civil war and, as a consequence, slow and often non-existent lines of communication with the outside world prevented normal experiment in animated movie production for typical fundamental education purposes.

The major lack was in the shooting, processing and projecting facilities; in the drawing and production stages of the job, because of the simple techniques employed, there were relatively few difficulties, apart from the scant amount of time available.

Two basic types of animation techniques were tried:



5.1. Without the use of any shooting camera, by direct drawing on 35 mm. movie film (this is a parallel technique to 4.1 in film-strip production method), and

5.2. Using a camera which photographs the artist's drawings (the equivalent of filmstrip technique 4.2).

5.1. DIRECT DRAWING ON 35 MM. WITH PEN AND INK

This technique is fully described and illustrated in a report made to Unesco in June 1949 by the writer, called 'How to make animated movies without a camera'.¹

In this report, two different ways of securing registration of the image on one frame of film with the image on the next frame are described.

5.1.1. A grid of cross lines is placed behind the film on which the animated images are drawn; this grid is identical for each frame. The drawing is done on a sloping bench; the film, being fed from a reel, passes upwards through a sliding channel which firmly holds a length of 24 frames (1 sec. of screening time) exactly over the registration grid. These 24 frames are drawn without changing the position of the film, and then the film is slipped forward and the next 24 frames are placed above the registration grid in readiness for drawing. The grid rests on a ground-glass with a mirror or white paper beyond it to reflect daylight through the film.

This method was attempted in the West China Project but bogged down owing to an unforeseen factor. In the late fall and winter, when our animation work was carried out, the atmosphere was excessively humid and very cold; satisfactory house and room heating was not usual and difficult to arrange for; the linear images in indian ink drawn by the artists on the film took such a long time to dry that, in the process, the ink in any image would distribute itself unevenly along the line, forming puddles here and shallow patches there; especially as the film was on a slanting bench (for easier drawing) the ink would flow downwards and form blobs at the bottom of each image and shallow patches at the top.

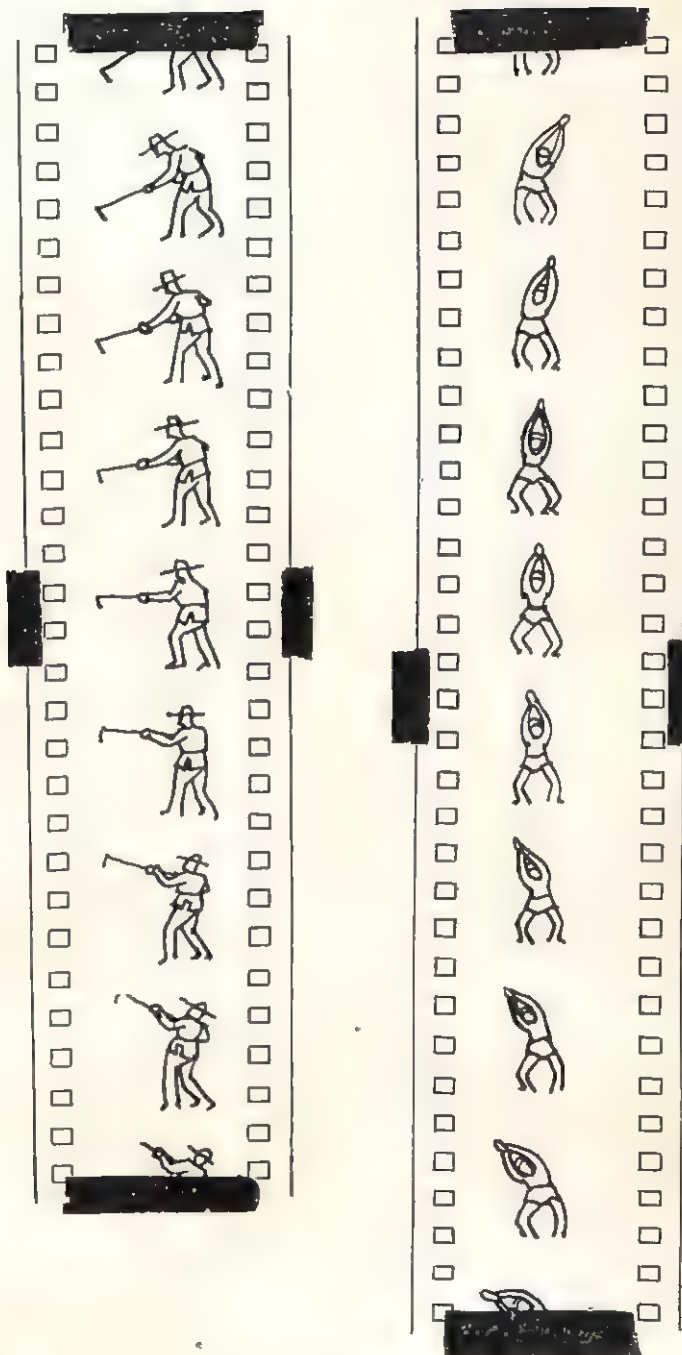
No doubt, given some time for tests and research, this atmospheric problem could be satisfactorily solved; unfortunately, we were short of time and did not undertake an adequate solution but rather concentrated on the following more certain methods.



¹ Reprinted in this book as Appendix 9.

5.1.2. This method of direct drawing on film uses an optical system of registration, and is fully described and illustrated in Appendix 9.

Briefly, it consists of an optical device which reflects a faint image of the frame just drawn, on to the frame about to be drawn. To do this, a concentrated illumination source is needed. We used



Portions of film prepared by direct drawing.

a filmstrip projector with a 300-watt lamp. Since the newly drawn film passed close to this projector, the heat from the lamp was just sufficient to dry up the ink and solve the atmospheric problem of slow drying.

However, the use of an artificial light source as suggested in the report on 'How to make animated movies without a camera' is not necessary, for, when cut off from all electricity, we found a much simpler solution. We worked in a darkroom and left one section of the window open to the sky light so as to illuminate the optical device from the same direction as the former projector lamp. If no light was allowed to leak under the bench on to the optical device, a clear image of the previous frame was reflected on to the frame to be drawn on.

Exploitation

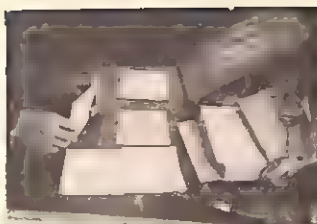
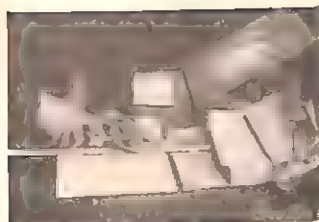
Thinking back to filmstrips made by the direct method, one advantage was that the artist's original could, without any intermediate processing, be projected. This is also quite possible with movies made by the direct method, but due to the much greater time involved in producing them and the higher wear-and-tear factors in screening them, it is not economically sound to use the artist's original in this way; after a few dozen screenings it will be worn out and all the effort gone to producing it will be lost.

Therefore, some facilities for reproducing it are essential. Printing at least one master from the original so that either the master or original can be kept intact is necessary. This point will be taken up later on.

5.2. PAPER METHOD OF ANIMATION

Alternative to the foregoing direct method is an adaptation of the standard 'Single-cel' method of animation (such as is used by Disney and most other animation studios). It is, however, much simplified. Most of the animation materials produced by the West China Project were done by this method, which, so far as we know, has never been tried out elsewhere exactly in this manner. Although at the time of writing we have not seen the finished result shot and projected, we have tested the method out as a production technique and found it has certain advantages over other methods. Therefore, we will describe it in detail in the hope that the finished result may prove to be of use for fundamental education purposes.

By it, movies are slightly slower to produce than by the direct method, but much quicker than by the standard Disney method. It permits greater detail and steadiness of image than the direct method and allows of stationary 'holds', repeated 'cycles' and most other features of the standard method, none of which are natural to the direct method, and all of which would seem to be valuable for fundamental education movies. Therefore let us see in what essentials it is a simplification of the standard Disney method.

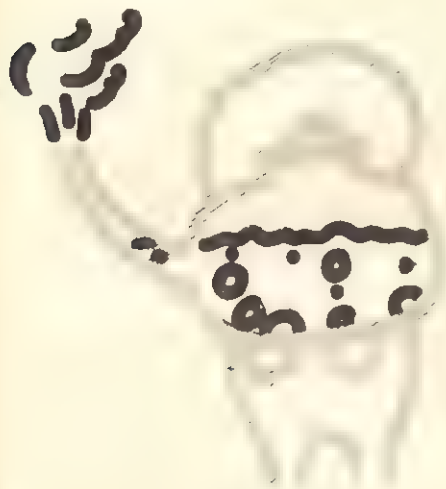


Comparison of the Standard "Single-cell" Method of Animation with the Simplified Paper Method.

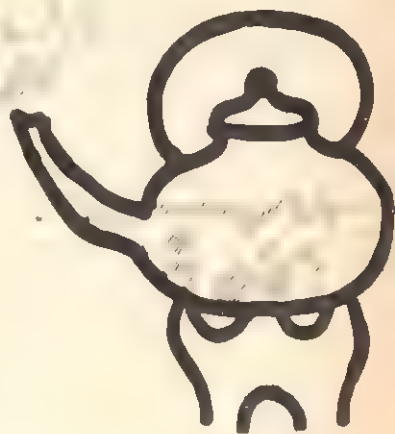
For all moving images the standard method uses separate drawings (24 for every second of screening time) on transparent sheets of celluloid, these are generally about 20 cm. \times 24 cm. or 8" \times 10". The simple method, on the other hand, replaces the expensive celluloid with cheap typewriter paper and uses a much smaller size of sheet (the ordinary typewriter sheet cut into four makes a satisfactory size). The small size further saves material and drawing time.

In the standard Disney method, drawings are first done on sheets of paper, then the outlines are traced on to celluloid with ink lines, and then the ink lines are filled in with paint. In the simple method, the drawings are done with a bold line straight on to the final papers.

In the standard method, the static parts of the picture are painted on paper or card and placed *underneath* the transparent celluloid carrying the animated images. In the simple method, the static parts are painted on celluloid with indian ink and placed *above* the papers bearing the animated images.



Standard method



Simple method

Printers' block made from celluloid overlaid on paper. Image on celluloid darkened to bring out contrast.

Another simplification is that the drawings are made with a Cado *Flo-Master Fountainbrush*, Cushman & Denison Mfg. Co., 135 W. 23 St., New York, 11, N.Y.; this is a fountain-pen with 'nibs' of various shapes and sizes made of felt, out of which flows a highly volatile black ink. This ink dries instantly on the paper so that the paper for the next drawing can be placed immediately on top of the drawing just done. (In the standard method, the ink takes a long time to dry and involves the use of tiers of racks to keep the undried celluloids from touching each other.)

The broad line of the Flo-Master pen and the small size of the sheet for drawing on makes for a very simplified linear graphic style; this is generally an advantage for fundamental education purposes.

In the simple method, registration of the paper during both drawing and shooting is by a small raised 'L' shape into which the rectangular corner of each paper fits. This contrasts with the standard method where punched holes in the celluloid fit over metal pins.

Apart from the above differences (which radically affect economy of production), the principle of the techniques is the same. The drawings are photographed one at a time under a movie camera which takes a single frame at a time; this may be either a 16 mm. or 35 mm. camera.



Animation paper, original size. The screen used in printing prevents accurate reproduction of the clear continuous line of the drawing.

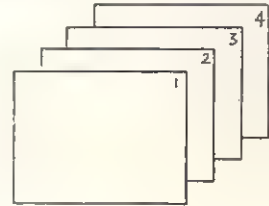
Simplified System of Shooting Instructions

By the standard method, for shooting instructions the drawings are each given one number consecutively and a rather complicated 'dope sheet' is written out for the cameraman, describing how they are to be shot. The simple method shortcuts the use of a dope sheet by a particular system of writing the numbers on the margin of each drawing. This system, which is self-explanatory to the cameraman, is as follows:

Type of animation

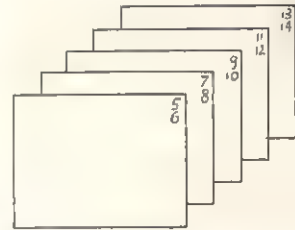
For the section of normal animation, one frame is taken of each drawing. This is technically known as 'SFA' or 'Single Frame Animation', one number is written on each drawing in sequence.

System of numbering the drawings



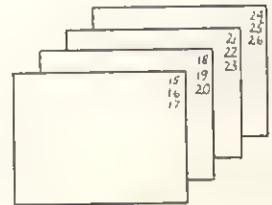
SFA

For very slow animation, since the difference between each drawing is so slight, only every second drawing need be made (that is, half the number of drawings) and two frames of each drawing need be photographed. This is technically known as 'DFA' or 'Double Frame Animation'. For it, two consecutive numbers are written on each drawing.



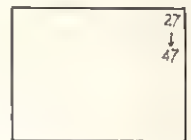
DFA

If animation is exceptionally slow, only every third drawing need be done and three frames of each drawing photographed on the film. This is technically known as 'TFA' or 'Triple Frame Animation' and for it three consecutive numbers are written on each drawing.

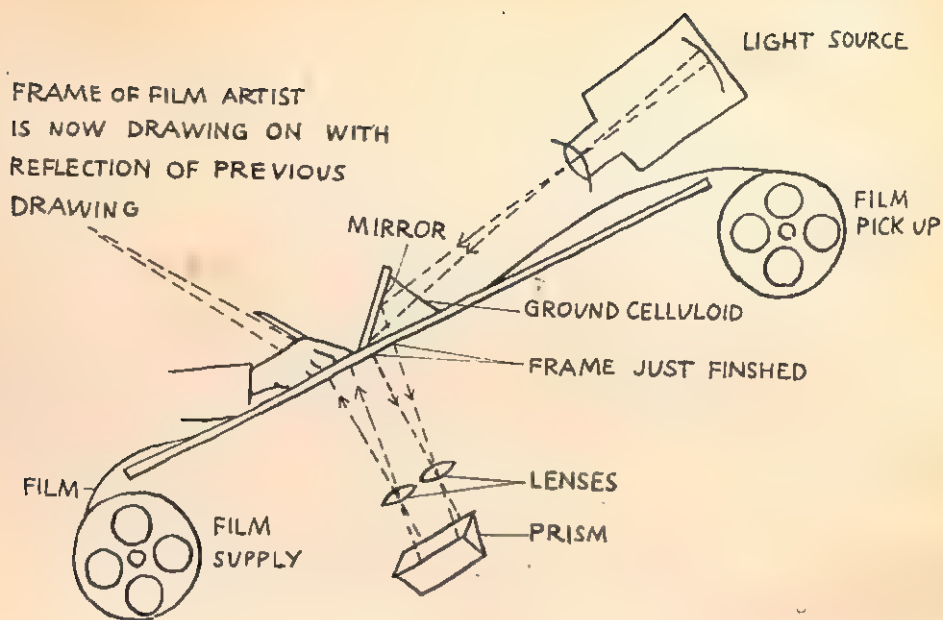


TFA

If the animation consists of no action at all, technically known as a 'hold', two numbers are written indicating the first and the last frames of the stationary image, and an arrow is placed between the numbers.

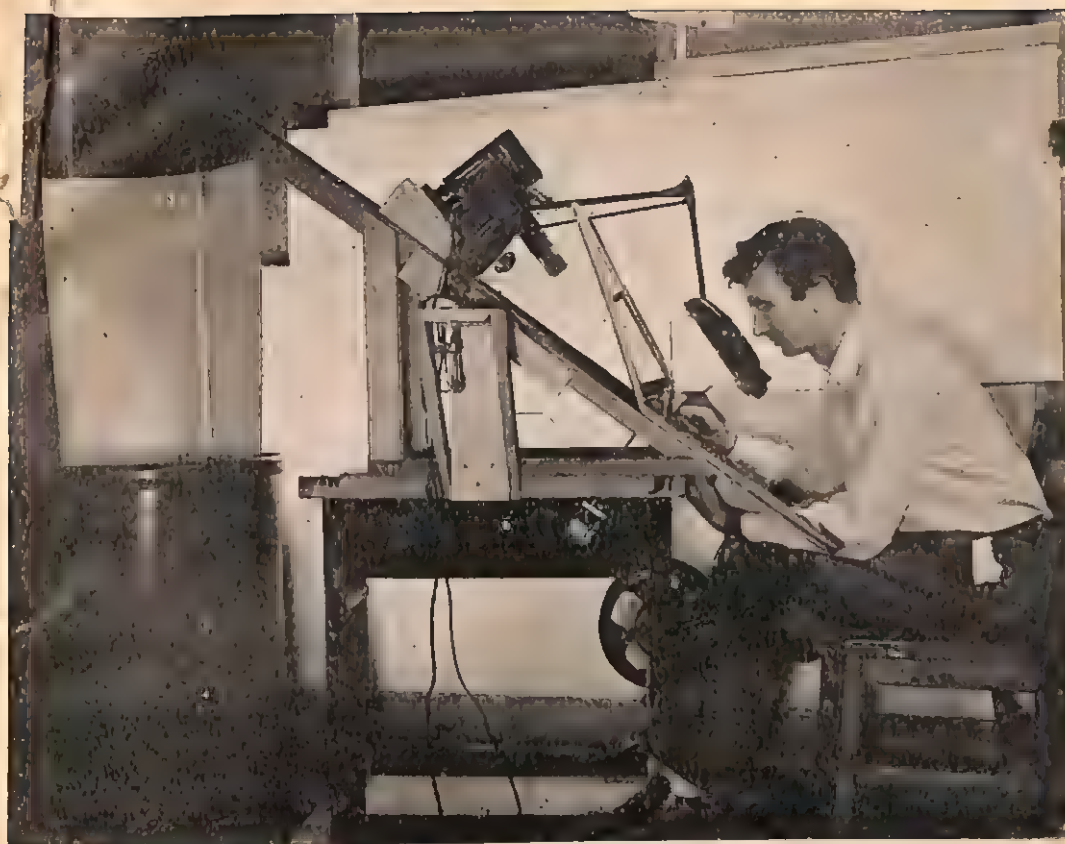


HOLD



And also over the page.





HOW TO MAKE FILMSTRIPS WITHOUT A CAMERA

This is done by the same principle used in the making of cameraless animation. However, the process is very much simpler.

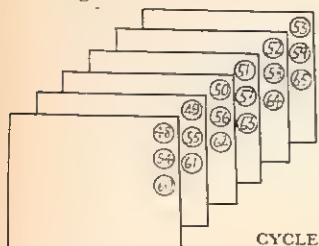
All that is needed is a device to hold the clear film in position and indicate the area of each frame while the artist is drawing. There are no problems of registration from frame to frame such as are found in animation. Each frame is treated separately.

The artist can use any types of transparent dyes (Craftint inks for painting on celluloid are recommended).

The hand-painted original can then be treated as a regular filmstrip negative and sent to a lab for printing.

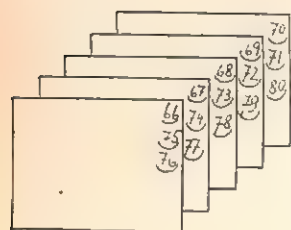
System of numbering the drawings

Type of animation



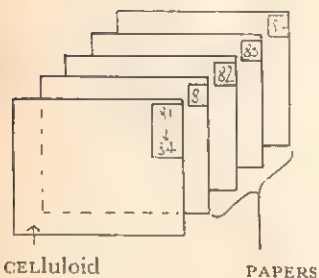
CYCLE

If the animation consists of an identically repeated or closed cycle of action, technically called a 'cycle' the same series of drawings is photographed over and over again; this is indicated by putting a circle around each number, and writing several sets of numbers on each drawing, the number on the last of the series linking up with the next number on the first of the series.



SHUTTLE

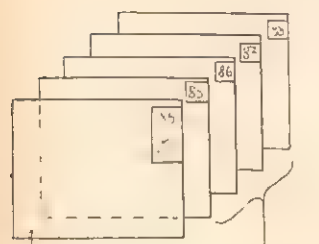
If animation consists of a repeated or closed cycle of action which is symmetrical (such as a pendulum motion), only half of the complete cycle of action is drawn, and these drawings are photographed first in a forward-going order and then in a backward-going order. This is known as 'shuttle' or 'half cycle' and is indicated by putting a semi-circle under the numbers, and writing several sets of numbers shuttle-fashion on the series of drawings.



CELLuloid

PAPERS

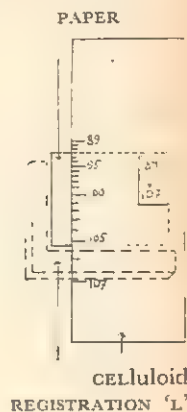
If part of the picture remains static while the other part is animated, the static image is drawn on celluloid, and the animated image on papers. To indicate that a celluloid is used, a *square* is drawn around the number both on the paper and the celluloid; (this prevents the cameraman from forgetting to place the celluloid on top of the paper when shooting). The same numbers are used on both paper and celluloid; on the celluloid they take the form of a hold, which means the first and last numbers with an arrow between; on the papers, individual numbers are written on each sheet in either single-, double- or triple-frame fashion.



CELLuloid

PAPERS

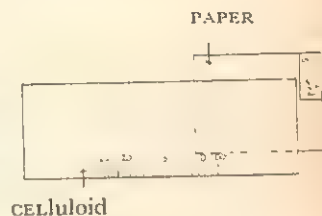
If an image, with no internal action in it, is moving in a straight direction (as, for instance, a ball falling or bird gliding) and it is desired to follow it by keeping it centred in the field of vision, the image in most cases is best drawn on paper, and the environment through which it is moving, on celluloid. The paper with the image on it is indicated as being 'held'; that is, the first and last numbers are written with an arrow between them; a square is drawn around the numbers to indicate the use of celluloid. A long strip of celluloid with the environment drawn on it has numbered calibrations etched on its margin; these indicate for each frame to be shot the position of the celluloid in relation to an etched hair-line on the 'L'. For horizontal travel there is a hair-line on the centre of the horizontal lobe of the 'L'; for vertical travel a hair-line on the perpendicular lobe.



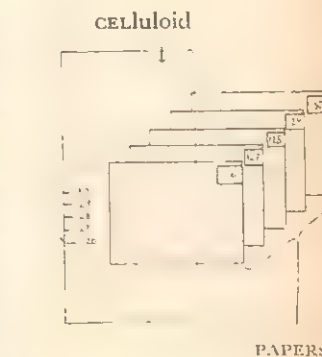
or

Depending upon the degree of graphic naturalism, there may be difficulties of the environment and the image interfering with or showing through each other. Therefore, it is best to conceive of the environment as either bypassing or else passing in front of rather than behind the image on the paper. If the environment consists of solid areas, behind which the image must disappear, the solid areas have to be filled in with white paint on the celluloid.

If it is necessary for the image to travel *in front of* its environment, it is best to draw the image on the celluloid and the environment on a strip of paper. Difficulties of image interfering with environment can usually be avoided by careful planning of the subject matter, or the frank adoption of a non-naturalistic graphic style.

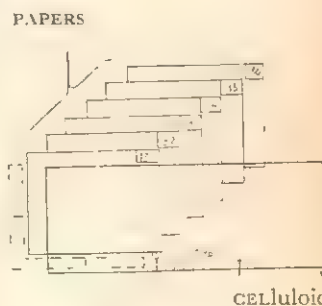


The most complex problem of imagery likely to be met with is when an image has an internal action moving in a particular direction (a man walking along a road), and it is desired to follow him by keeping him centred in the field of vision. There are two technical solutions: one is to reduce the environment to an absolute minimum and to draw it every time on the papers along with the animated image. (For fundamental education purposes where simplicity of statement is usually desirable, this is often a practical solution, and it has the additional advantage that the environment can be drawn in 'multiplane', that is, give parallax action, which will create a vivid sense of three-dimensional space.) If, however, the environment is not reducible to simple elements, the other solution is to draw it once only on celluloid. During shooting, numbered calibrations, etched on the edge of the celluloid, indicate its position in relation to the hairline on the 'L'; the corresponding numbers on the papers indicate which drawing is placed under the celluloid during the photographing of each frame.

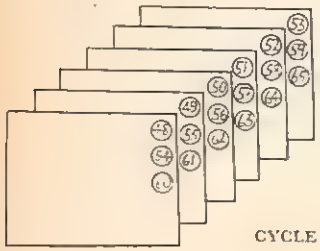


or

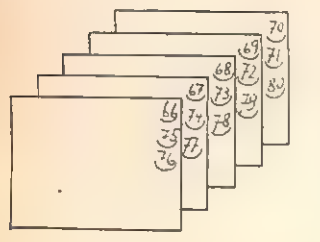
In most animated films all the above conditions are interlaced and combined.



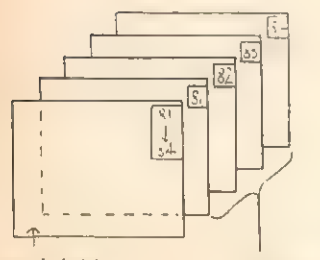
System of numbering the drawings



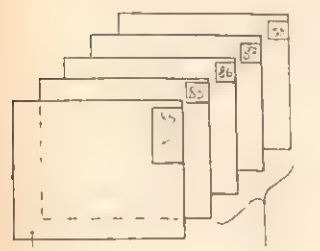
CYCLE



SHUTTLE



CELLULOID PAPERS



CELLULOID PAPERS

Type of animation

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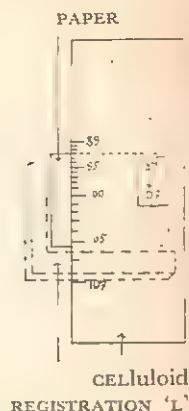
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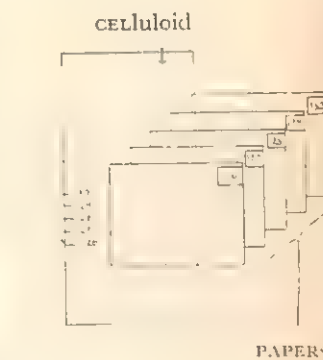
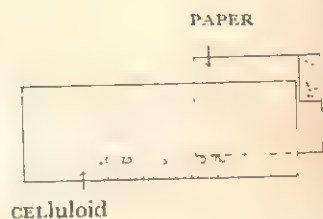


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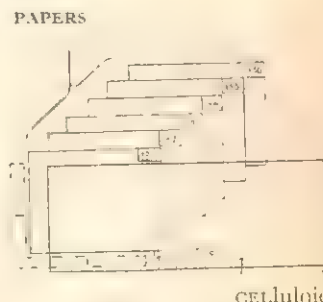
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or



or



In most animated films all the above conditions are interlaced and combined.

Other Technical Points

When shooting with celluloids, a sheet of plate glass should be used to keep the celluloid flat and prevent cockles in it from reflecting light into the camera. If desired, more than one celluloid can be used at a time above the paper drawings.

If certain parts of the film use celluloid above the papers and other parts do not, it is best in the latter parts to keep the equivalent number of blank celluloids above the paper; the reason for this is that the celluloid cuts down the brightness of the paper slightly, and if used in some parts and not in other parts there will be fluctuations in the over-all illumination of the movie.

The Flo-master pen ink used for drawing on the paper makes only a rather pale line when used on the celluloid; this can sometimes be used to good effect, but if a heavy black line is desired, ordinary indian ink or showcard colour should be used on the celluloid. French chalk or fuller's earth should be previously rubbed on the celluloid, if there is difficulty in making the paint or ink adhere to the celluloid.

The typewriter paper used should be as smooth and grainless as possible; and also semi-transparent so that a black ink line on it can be seen through two thicknesses of it.

This is essential as the artist has to see the previous one or two drawings through the sheet which he is working on.

The paper does not need to be cut in four with precision as to right angles, if when the paper is cut care is taken to assemble the original four outside corners (since they are usually true right angles); these corners should be used for registration in the 'L'. If, when the paper is assembled, a line is painted on the outside of the stack at this particular corner, there will never be any confusion about which is the correct corner to register by.

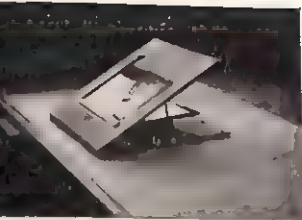
Our artists used a small wooden frame with a hole cut out of it and a glass countersunk in it to let the light through from behind. A sheet of white or silver paper or a mirror behind the glass reflects enough light to make three or four sheets of paper placed on top of the glass semi-transparent. The 'L' shape on two sides of the glass panel was made out of thick cardboard or thin plywood.

Generally speaking, if the use of celluloid can be dispensed with, the cameraman's job is much simplified.

Note. It should be understood that the above radical simplification of the standard movie-cartoon technique is not intended as a substitute method of making films of the commercial animated cartoon type with a fundamental education content, but is conceived of as a new graphic and artistic approach for adapting simple linear animation to fundamental education needs.

Animated Movie Material Produced by the Project

The animation sequences turned out by this Project were strictly experimental; they were made primarily to illustrate two techniques (the 'direct' and the 'paper' methods) and they show the first attempts of five Chinese artists to handle what to them was a completely new medium; since most of our efforts were spent



in introducing, evolving and establishing the technical method and relatively little time given to the content of the sequences, the materials produced are not intended as examples of well-planned application of the techniques. The animated sequences are as follows, (approximate lengths being for 35 mm. film) :

1. Using direct method, 5.1.2. (optical registration) 40 ft. or 12 metres, on *Trachoma*.
2. Using paper method, 5.2, 100 ft. or 30 metres, on *Safe Drinking Water*.
3. Using paper method, 5.2, 100 ft. or 30 metres, on *Good Habits for Children*.
4. Using paper method, 5.2, 100 ft. or 30 metres, on *How T.B. Infection can Spread*.
5. Using paper method, 5.2, 200 ft. or 60 metres, on *Preventing Cholera Infection*.
6. Part paper and part direct method, 200 ft. or 60 metres, on *Eating a Balanced Diet*.

Since the same subject matter runs through both halves of No. 6, this sequence offers a comparison of the effectiveness of the two techniques.

Production Rates of Animated Drawings

These rates varied from artist to artist and also with the complexity of the imagery used. Exact figures can only be arrived at if the time taken by the artist to think and plan is not included; this is referred to as *net drawing time*, and was as follows:

For method 5.1.2 (Direct drawing on film, using optical registration)

Trachoma	60 frames per hour
Balanced Diet	60 frames per hour

For method 5.2 (Photographed papers)

Preventing Cholera Infection	20 frames per hour
Good Habits for Children	80 frames per hour
How T.B. Infection can Spread	70 frames per hour
Safe Drinking Water	50 frames per hour

If the time taken by the artists to think and plan and make out the numbering system on the margin of the paper is included, we get the *gross drawing time*. This, which is a much more approximate figure, is as follows:

For method 5.1.2 (Direct drawing on film, using optical registration)

Trachoma	30-40 frames per hour
Balanced Diet	20-30 frames per hour

For method 5.2 (Photographed papers)

Preventing Cholera Infection	10-20 frames per hour
Good Habits for Children	40 frames per hour
How T.B. Infection can Spread	40 frames per hour
Safe Drinking Water	20 frames per hour

Shooting, Developing and Printing

It was originally planned to have the shooting, developing and printing of the paper animation and the developing and printing

of the direct animation done in Nanking, Shanghai or Hong Kong, but the civil war prevented this.

In the case of the paper animation, on the first occasion it would have been necessary for the chief artist to go in person with the material to be shot and explain in detail to the cameraman how it should be done, stand by while it was being photographed, inspect the result when developed and printed, and finally establish a routine which would permit all future animation materials to be sent by mail for shooting and processing.

The direct-on-35 mm. animation can be optically reduced to 16 mm.; the paper animation can be shot on either 16 mm. or 35 mm., depending on projection needs. In fundamental education areas which are near enough to a shooting and processing centre, the above could well be the procedure.

Field Shooting and Processing

In the China Audio-Visual Project, cut off from the above procedure, we hoped to make do with a Sept 35 mm. camera which can also be used as a 35 mm. printer. This camera is designed to take approximately 15 ft. of film at a time, and unless a special housing for the camera is built, all shooting, developing and printing has to be in very small quantities.

At the time of writing, we have not fully exploited the possibility of this method. Until recently, the Sept camera has been tied up with the shooting and printing of the project's filmstrips; the voltage of the electric supply for doing this fluctuated so much that an exposure averaging 10 seconds for each frame was necessary (the number of seconds for each frame being varied to compensate for the voltage at the particular moment of shooting). This means that the material was turned out very slowly. A further factor was the lack of a competent or adequately trained person until 1 October, to take charge of the shooting and processing; since that date a new and very competent person has had his hands full improving the equipment, keeping up with the filmstrip work and has had neither time nor a suitable assistant for training. Only in December did we get around to building a camera-stand suitable for shooting animation, and installing photoflood lights to cut down exposure time and speed up the operation of shooting and printing to a point where it would be practicable for handling the longer lengths of film needed for movie work. At the time of writing, a first test of 10 ft. has been shot which shows that a fairly even exposure can be maintained from frame to frame. Also a 40 ft. or 12-metre section of direct animation had a negative and print made from the original fairly satisfactorily; both these tests indicate that the Sept camera is possible for 35 mm. shooting and printing of animation in an area removed from a large centre.

A Cine Kodak Special or like camera could equally be used for shooting the paper method on 16 mm. The laboratory would have to have facilities for developing 16 mm. unless communication were possible with a larger 16 mm. processing centre.

Lacking electricity, in a region where the sky conditions are steady, daylight could possibly be used for shooting and printing.

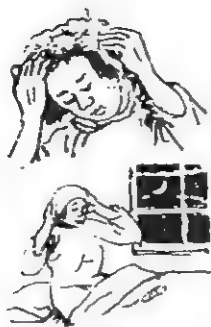
It would, however, be difficult for the field laboratory to reduce

35 mm. to 16 mm., and as projection is more likely to be in 16 mm. this would rule out the use of direct-on-35 mm. animation as a production technique in favour of the paper method shot on a 16 mm. camera. Unless reversal film were used, 16 mm. printing facilities would have to be available. (It is theoretically possible to draw directly on 16 mm. film, but the very small size of the frame makes the animation a bit too unsteady and rough to be usable.)

It is possible that, during 1950, this project may put the shooting, developing and printing of future 35 mm. animated movies on as practical a field basis as the production of the animated drawings have been.

Meantime, it is planned to have the animated drawings which were made during the latter part of 1949 taken to Hong Kong, or another large centre, to be shot and processed. It is hoped also to convert three black-and-white negatives into coloured prints by the method described in Appendix 9.





A



B



МІЛІЯ ЗАРТИМ

C



D



E





A



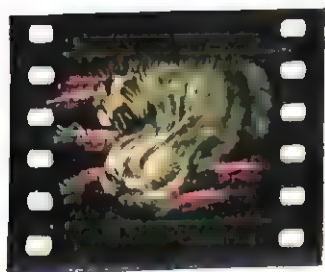
B



C



D



E



F



G



H

洗碗和防止傷 寒痢疾之傳染



026A



026B



APPENDIX 1

UNESCO CHINA A-V. PROJECT

SUMMARY STATEMENT OF ACCOUNT

Covering the period 1 February through 20 December 1949

AVP Funds drawn during period.	U.S.\$10,367.15	
Proceeds from sale of filmstrips:		
U.S.\$ A/c.	U.S.\$ 35.48	
Silver A/c	U.S.\$ 16.47	51.95
Expenses of Director's office:		
U.S.\$ A/c.	U.S.\$2,664.37	
Silver A/c.	U.S.\$ 951.79	U.S.\$ 3,616.16
Expenses of Art Department:		
U.S.\$ A/c	U.S.\$1,402.80	
Silver A/c	U.S.\$3,140.09	4,542.89
Expenses of Business Department:		
U.S.\$ A/c	U.S.\$ 37.50	
Silver A/c	U.S.\$ 974.29	1,011.79
Expenses of Technical Department:		
U.S.\$ A/c	U.S.\$ 202.12	202.12
Expenses of Field Department:		
U.S.\$ A/c	U.S.\$ 469.19	
Silver A/c	U.S.\$ 530.29	999.48
Loss on sale of threads and silver dollars (shown in Silver A/c)		196.85
Net expenses for entire period.		U.S.\$10,569.29
Advanced by H. W. Hubbard	473.21	
Salary on credit, E. Fan.	811.83	
Salary on credit, S. Hsu.	348.50	
Salary on credit, C. C. Hu.	57.50	
Due to JCRR	13.00	
Deposit with Kodak, Hong Kong		35.28
Balance on hand:		
In Gold Bullion as Re-		
serve Fund (shown in		
U.S.\$ A/c).	U.S.\$1,247.50	
In silver dollars.	U.S.\$ 20.89	
In thread (48 bundles)		
(shown in Silv. A/c).	U.S.\$ 250.18	1,518.57
	U.S.\$12,123.14	U.S.\$12,123.14

Note: Silver dollar amounts are converted into U.S. at an average rate.

APPENDIX 2

RURAL HEALTH FILMSTRIPS

The following list, given here for information, shows the first sales list issued by the Project to educators who might wish to buy copies. The prices are at January 1950 rate. Unesco has no commitment in this regard.

No.	Title, subject and description	No. of frames	Price	
			Black & white U.S.\$	Hand coloured U.S.\$
1	THE TWINS. On smallpox and the need of vaccination. Tells story of a handsome pair of twins much admired until they got smallpox through the ignorance of their doting parents. One becomes blind and the other marred by pockmarks. All parents urged to vaccinate their children.	24	0.80	1.50
2	SAO SAO'S STORY. On smallpox and vaccination. Story of mother with one precious baby boy. They did not vaccinate him and he got smallpox and died. A neighbour's baby also caught it and got blind in one eye. Brother learns in literacy class about vaccination and Sao Sao's next baby as well as the whole neighbourhood are vaccinated and grow up healthy.	27	0.80	1.70
3	HSIU LIEN'S ROMANCE. On smallpox and vaccination. The story of a girl who lost a brother from smallpox and finally got the disease herself. She becomes pockmarked and her boyfriend leaves her, but she is so active in helping her neighbours to get vaccinated that all praise her, her friend returns and they 'live happily ever after'.	31	0.85	1.90
4	WANG SAN'S EYES. On trachoma. Story of carpenter who had good eyes, was clever and got good pay. He contracts trachoma by using a towel in a restaurant and loses his job because he cannot see well. His wife gets it from him, but she is cured before too late and they keep it from their child by obeying the doctor and using preventive means.	33	0.85	1.90
5	WHAT TEACHER SAID. On trachoma. A story of a man with a load of vegetables who falls against the school because he is half-blind with trachoma. The teacher makes this the occasion for a talk to his pupils on how to avoid the disease.	25	0.80	1.50

No.	Title, subject and description	No. of frames	Price	
			Black & white U.S.S	Hand coloured U.S.S
6	OUR EYES. On trachoma. Stresses value of our eyes and tells how to take care of them, especially in order to avoid trachoma.	47	1.00	2.50
7	CHANG LIN—HOW HE GOT TRACHOMA. Story of Chang Lin, who gets trachoma, gradually loses his job and has to be supported by his wife.	27	0.80	1.70
8	REGRETS. On trachoma. Story of a vegetable vendor who gets trachoma, has to stop work and be supported by his wife and be led around by her. One day he falls and breaks his leg, then he sits daily beside the road, chanting a song to people to warn them of the dangers of trachoma.	38	0.90	2.00
9	SAFE WATER. A descriptive film covering the subject of water, how it gets contaminated, and how it can be made safe to drink.	27	0.80	1.70
10	MY FAMILY VILLAGE. On safe water. Shows how many people get sick from contaminated water from river or pools and how water must be treated by boiling and filtering to clean it.	44	0.95	2.30
11	LITTLE WANG EATS WATERMELON. On safe food. Story of a schoolboy who bought a watermelon exposed to flies and got sick. His teacher takes this occasion to tell the pupils how to make food safe for eating.	43	0.95	2.30
12	FLY AND FOOD. A descriptive film showing the anatomy of the fly, how it carries germs to food, how to protect food from flies and how to get rid of flies.	37	0.90	2.00
13	HEALTH SONG. From the Mass Education Movement Song Book (In process).			
14	HEALTH HABITS OF SCHOOL CHILDREN, I. (In process.) Daily health habits which can be taught and practised in the primary school.	57	1.15	2.95
15	HEALTH HABITS OF SCHOOL CHILDREN, II. (In process.) Continuation of the above.	47	1.00	2.50
16	THE HEALTHY STUDENT. Taken from Dr. Y. Y. Ku's <i>Health Reader</i> for primary schools. Covers the rules of health and hygiene for home and school life.	36	0.90	2.00
17	TETANUS OF NEWBORN INFANTS. A detailed description, step by step, of how newborn infants should be handled, particularly as to the cutting of the umbilical cord and the use of sterilized materials. The need of a trained midwife is emphasized.	72	1.30	3.55

APPENDIX 3

LIST OF DIRECT ARTWORK FILMSTRIPS

No.	Title	No. of frames	Artist	Technique
000	Trachoma 21-day treatment		Sung	Colour on clear
001	Trachoma 21-day treatment	56	Sung	Colour on clear
002	Trachoma	28	Chao	Colour on clear
003	Safe water		Chao	Colour on clear
004	Safe water		Chao	Colour on clear
005	Li Szu eats eggs		Chao	Pen drawn on clear
006	The fly	44	Fang	Pen drawn on clear
007	Smallpox prevention	47	Hsu	Etched on black
009	Good Habit Song (with English)	39	McLaren	Pen drawn on clear
009a	Good Habit Song	86	Hsu	
009b	Good Habit Song	69	Hsu	
009c	Good Habit Song	68	Hsu	
009d	Good Habit Song	70	Hsu	
010	Trachoma 21-day treatment		Hsu	Colour on clear
011	Smallpox and vaccination	81	Sung	Pen drawn on clear
012	Diary of little Jung	52	Fang	Pen drawn on clear
013	Dreadful smallpox	64	Ma	Pen drawn on clear
014	Smallpox		Sung	Pen drawn on clear
015	Tuberculosis	40	Huang	Pen drawn on clear
016	Mosquitoes	75	Chao	Pen drawn on clear
017	The lovely bird	38	Chao	Chinese brush-painting on clear
018	Beware of the mosquitoes	74	Wu	Pen drawn on clear of No. 020
019	Mosquitoes and malaria	80	Sung	Etched on clear
020	Beware of the mosquitoes	73	Wu	Etched on black, compare with No. 018
021	Care of cuts and wounds	69	Sung	Etched on black
022	T.B. contagion and prevention	69	Sung	Etched on clear
023	The lovely bird		Chao	

Note: The above are largely in the nature of experiments with technique and will not be ready for general distribution until revised and printed in quantity.

APPENDIX 4

FILMSTRIP PRICES

(in U.S.\$)

Frames	To A-V Centre Processing	AVP Costs		Black and white	Colouring	Total
		Film, can, commentary, postage, etc.				
Up to 25	0.50	0.20	0.80	0.70	1.50	
26-30	0.50	0.30	0.80	0.90	1.70	
31-35	0.55	0.30	0.85	1.05	1.90	
36-40	0.60	0.30	0.90	1.20	2.00	
41-45	0.65	0.30	0.95	1.35	2.30	
46-50	0.70	0.30	1.00	1.50	2.50	
51-55	0.75	0.35	1.10	1.65	2.75	
56-60	0.80	0.35	1.15	1.80	2.95	
61-65	0.85	0.35	1.20	1.95	3.15	
66-70	0.90	0.35	1.25	2.10	3.35	
71-75	0.95	0.35	1.30	2.25	3.55	
76-80	1.00	0.40	1.40	2.40	3.80	
81-85	1.05	0.40	1.45	2.55	4.00	
86-90	1.10	0.40	1.50	2.70	4.20	
91-95	1.15	0.40	1.55	2.85	4.40	
96-100	1.20	0.40	1.60	3.00	4.60	

Note: Positive film costs about 2 cents per foot or 8 cents per 4 ft. (64 frames).
 Colouring costs about U.S.\$0.03 per frame. Containers cost about U.S.\$0.05 each.

APPENDIX 5 HEALTH POSTERS

Subject	No.	Description	Form	Date	Size	Colour	Quantity
Vaccination and smallpox	1	Mother having baby vaccinated 'Quickly get vaccinated'.	Wall poster	March 1949	15" x 20"	3-colour	1,000
	2	Results of smallpox, 'Fearful smallpox'.	Wall poster	March 1949	15" x 20"	4-colour	1,000
	3	Vaccinated baby, benefits of vaccination.	Wall poster	March 1949	15" x 20"	3-colour	1,000
	4	Pockmarked boy, evils of non-vaccination.	Wall poster	March 1949	15" x 20"	4-colour	1,000
	5	'If you want to avoid smallpox, get vaccinated'.	Story poster	April 1949	15" x 20"	black & white	4,000
	6	Smiling babe, vaccinated.	Flyer	April 1949	5" x 15"	2-colour	2,000
Trachoma	7	Pockmarked babe, not vaccinated.	Flyer	April 1949	5" x 15"	2-colour	2,000
	8	Avoid public towels.	Wall poster	April 1949	15" x 20"	4-colour	1,000
	9	Trachoma.	Story poster	June 1949	15" x 20"	4-colour	1,000
	10	Trachoma announcement.	Flyer	June 1949	7" x 11"	3-colour	500
	11	Trachoma—Clean towels.	Flyer	June 1949	7" x 11"	3-colour	500
	12	Trachoma—Continuation of 10 and 11.	Flyer	June 1949	7" x 11"	3-colour	500
Safe food	13	Keep dishes clean.	Wall poster	July 1949	15" x 20"	3-colour	1,000
	14	Mr. Healthy and Mr. Dirty.	Story poster	Dec. 1949	15" x 20"	3-colour	1,000
Safe water	15	Boil water.	Wall poster	Dec. 1949	15" x 20"	4-colour	1,000
Tetanus	16	Precautions at childbirth.	Story poster	Dec. 1949	15" x 20"	4-colour	1,000
Neonatorum	17	Health Habits.	Wall poster	Dec. 1949	15" x 20"	4-colour	1,000
Health Habits	18	Health Habits.	Story poster	Dec. 1949	15" x 20"	4-colour	1,000
Healthy Village	19	Calendar 1950.		Dec. 1949	15" x 20"	6-colour	3,000
	20						

Note: The cost of the 15" x 20" size in 4 colours and the 6-colour calendar was about U.S. \$0.08 per poster.

APPENDIX 6

GENERAL INFORMATION MEMORANDUM PREPARED FOR ARTISTS

I. Kinds of materials to be prepared:

1. Wall poster.
 - (a) In colour.
 - (b) 15" × 20".
 - (c) 2 or 3 sheets per topic.
2. Collected pictures on one sheet 20" × 14".
 - (a) 8 or 12 frames to sheet.
 - (b) To go to every home.
 - (c) All important points must be presented.
 - (d) Only 1 or 2 sheets per topic.
3. Flyers in quantity (smaller pictures to be pasted up on walls, poles, etc., and handed out to people like ads.).
 - (a) About 4 × 10 inches.
 - (b) Simple picture.
 - (c) Main idea in words also.
 - (d) Should indicate the time and place for action (e.g. time and place for vaccination).
4. Filmstrips
 - (a) 30-50 frames per filmstrip.
 - (b) 2 or 3 strips per topic.See 'Rules for Making Filmstrips'.
5. Drama
 - (a) Should be suitable for school children to act out.
 - (b) 2 or 3 per topic.Perhaps later radio and movies will also be used.

II. Procedure in producing drawings:

1. General idea given to artists by Director's Office, health or agriculture specialists.
2. Artist decides what his aim is in making picture or strips.
3. Artist makes first sketch.
4. Sketch submitted for criticism by selected group.
5. Re-sketches.
6. Final check by critics.
7. Final drawings.

Principles for Artists

1. Audio-visual materials must be based on local reconstruction programme within the framework of the Unesco aims.
2. A-V materials should be of wider application, if possible, elsewhere in China and in Unesco Member States.
3. As many media and approaches as possible should converge on same individual (USDA findings) (e.g., posters, filmstrips, drama and connected pictures are to be seen by the same person).
4. Our aim to reach *all the people*, starting in the schools, working through the literate classes and co-operatives, finally into the home.

5. Draw in terms of local life, farming, clothing, housing, etc.
6. Relate to interests and needs of people. What do they like? What do they want? Calendars? Coloured wall-pictures? Dramas?
7. Our ideas and materials must be adapted to the level of understanding of the masses. Steps between connected pictures should be simple and clear.
8. One main idea to each picture.
9. Have principal objects as *large* as possible.
10. Background should be inconspicuous or omitted.
11. Ideas must be scientifically accurate.
12. Do not unnecessarily offend or antagonize. Cherished ideas or beliefs of the masses, even when erroneous, should be touched upon tactfully and constructively.
13. A course of action must be provided to follow A-V education programme, e.g., vaccination for smallpox.
14. Artists should be *creative* and *resourceful*. Not merely copy. Use varied techniques and approaches.
15. Contrast is seen farther and attracts attention—deep, heavy blacks and clear whites.
16. Written characters should be:
 - (a) Simple in choice.
 - (b) Few in number.
 - (c) Standard in writing.
 - (d) Heavy black strokes if the background is white. However white letters on a black background are even better.
17. In health, the emphasis should be on prevention, rather than cure.

Rules for Making Filmstrip.

1. All frames in proportion of 3 × 4, since the 35 mm. film negative is in this proportion.
2. All frames are shown horizontally on the screen and should be drawn with the longer dimension horizontal.
3. Drawings preferably 9" × 12" (not smaller than 3" × 4").
4. Number of frames (or slides), 30 to 50, but sometimes may be shorter or longer.
 - (a) Thirty-five a good number.
 - (b) Showing of the whole strip usually takes about 45 min.
5. One main idea to a picture.
6. Action and life should be portrayed whenever possible.
7. Characters or words:
 - (a) May be on same frame with picture, on one side, underneath.
 - (b) May be on alternating frames.
 - (c) May be omitted and commentary depended upon for explanation.
8. Characters (words) should be:
 - (a) Simple in choice.
 - (b) Few in number.
 - (c) Standard in writing.
 - (d) Heavy black lines.
 - (e) Not more than 50 to a full frame.
9. Drawing and writing in black and white, no colour. (Filmstrips will be coloured after the making of the final pictures.)
10. A full commentary should accompany each filmstrip, to take about one minute, on the average, per frame.
11. Plan whole filmstrip in advance, frame by frame.

12. The following is an example given by the USDA of the order for structure of a filmstrip (a variety of plots is desirable):
- a) Open with a familiar situation, with a problem calling for solution, e.g., trachoma eyes, rice-borers destroying crop.
 - b) Information or skill necessary to meet situation. Combine demonstration, dramatization, explanation, suited to farmers' experience, intelligence and means.
 - (c) Main points are summarized.
 - (d) Problem is turned toward audience. Film closes with audience feeling a desire to act as suggested in film and as provided in reconstruction programme. (From USDA 'How to make filmstrips'.)
13. Filmstrips may be composed of:
- (a) Photos.
 - (b) Drawings.
 - (c) Charts and graphs.
 - (d) Maps.
 - (e) Cartoons.
 - (f) Lettered titles and sub-titles.
 - (g) Combinations of the above.

APPENDIX 7

SPECIAL BRIEF FOR ARTISTS

Some of the important points to be emphasized in the filmstrips on SAFE WATER-SAFE FOOD.

Safe Water

1. Safe from contamination of contagious disease germs.
Clear looking water may not be safe from contagious disease germs, for example:
 - (a) Water that has run through a sand filter.
 - (b) Water mixed with *ming fan* and let settle.
2. Boiled water is safe, for so great a heat kills these contagious disease germs.
3. Boiled water must be used from clean containers. For instance, if boiled water has been poured into tea leaves in a teacup that has been used by a person who has typhoid or cholera, and not properly washed, there may still be minute particles of sputum on the edge of the cup, and this sputum can contain contagious disease germs.
4. All dishes, especially those coming in contact with the lips, as chopsticks, bowls, cups, must be carefully washed. When people are sick, it is best to keep all the dishes they use separate, wash them separately, scald them with boiling water, and kept in a clean separate place.
5. The contagious disease germs we are talking about now, are the ones causing intestinal infections, like diarrhoea, dysentery, typhoid, cholera and intestinal worms. These contagious disease germs are found in the excreta—the feces, urine, and sputum—of the sick person. It is from these sources that the contagious disease germs contaminate the water we may use to drink, for instance:
 - (a) River water where fecal buckets have been washed, or where toilets near the river have had the fecal contents washed into the river, etc.
 - (b) Water in the paddy fields or small streams, where fertilizer has been scattered.
 - (c) Well water, where wells are too near toilets or fecal pits or farmyard refuse, which may leak through the soil into the well.
Where the outside of the water buckets may have been set down in yards or rooms where people have urinated or babies have passed feces, and where the bucket is then dropped into the well, contaminating the water before it is drawn out.
Uncovered wells where the surface water may be contaminated by people or by animals.

Safe Food

1. Safe from contamination of contagious disease germs. (We are now considering only the contagious disease germs which cause sickness in the intestinal tract, like diarrhoea, dysentery, typhoid, cholera, intestinal worms.)

2. Foods should be cooked enough to kill any possible contagious germs—care should be taken in cooking leafy vegetables, so that every part of the vegetable is heated as hot as boiling water would be. Because vegetables:
 - (a) May be contaminated in the field by fertilizer used.
 - (b) May be contaminated by contaminated water used to wash them and keep them fresh.
 - (c) May be contaminated by handling with hands contaminated with the contagious disease germs.
3. Foods should be handled only with clean hands, whether eating, preparing or just handling food, for one of the most common methods of transmission of contagious disease is through contaminated hands.
4. Food containers and chopsticks should be washed clean after using and then kept in a clean place. One should never use food containers used by someone else, until after those containers have been washed clean.
5. Foods should not be eaten raw unless carefully cleaned, that is, carefully washed in boiled water, or put into boiled water for 15 seconds. Raw foods are most often contaminated from handling by people who may have contagious disease germs on their hands and, second, from use of water, contaminated with contagious disease germs, to wash the fruit or vegetables.
6. Foods must be protected from flies, which:
 - (a) Carry contagious disease germs on their feet and legs, as they walk on contaminated feces, urine and sputum, and then walk on the food we eat.
 - (b) Flies usually have contagious disease germs in their digestive tracts as they may have eaten contaminated feces, urine and sputum. These germs the flies leave in the fly specks, which may be a bit of their feces or sputum. When flies eat, they first regurgitate a bit of sputum, spit it out and then eat. Thus, if these fly specks are left on food or chopsticks or bowls, we may eat them and thus eat the contagious disease germs they contain.

Excreta

The feces, urine, sputum from people sick with contagious diseases—diarrhoea, dysentery, typhoid, cholera, intestinal worms—contain the dangerous germs causing these diseases. These diseases are caused by these germs getting into the mouths and then intestinal tracts of well people, who then contract the disease.

These contagious disease germs are most commonly transmitted by:

1. Feces from people sick with the above-mentioned contagious diseases, which contaminate:
 - (a) Water we drink or use for food.
 - (b) Food we eat.
 - (c) Hands we then use for eating our food or preparing it. Babies and small children defecate on floors or yards or almost everywhere. This is often supposedly eaten by the dogs, but the dogs cannot leave the floors or dirt free from germs. Then children playing there sit in it or get their hands contaminated. And what about the dogs? Many dogs are known to carry various kinds of disease germs in their intestinal tracts, and then pass them in their feces, which become a source of contagion.
2. Urine from people sick with the above-mentioned contagious diseases, which contaminates places and things just as do the feces. Many men

urinate almost anywhere, thus they may leave contagious disease germs in the urine-soaked soil. These germs may live for a long time in the moist soil, be spread around by people walking over it, or by flies, or by rain washing the dangerous germs around into water supply, etc.

3. Sputum from people sick with contagious diseases may be left on chopsticks, the edges of cups, and bowls and not properly washed off, so that others using those utensils may become sick.

Too many people have a wrong habit of spitting where people may walk in it and thus spread infection.

4. Flies may walk on or feed on the above-mentioned excreta and then transmit the contagious disease germs.

Simple Health Rules, which if followed carefully will prevent the contagious diseases of the intestinal tract—*Diarrhoea*, *Dysentery*, *Typhoid*, *Cholera*, *Intestinal Worms*.

1. Drink *only* boiled water or tea made from boiled water.
2. Never drink unboiled water.
3. Have all foods, especially leafy vegetables, cooked enough to kill any possible contagious disease germs—that means that all parts of the vegetable must be as hot as boiled water would be.
4. Never eat uncooked foods unless properly washed or prepared.
5. Always wash hands *before* eating or handling food, and *after* going to the toilet.
6. Sanitary care and disposal of all excreta—feces, urine, sputum.
7. Fly control:
 - (a) Destroy all breeding places, as far as possible.
 - (i) Sanitary toilet a dark fecal pit, *no* rays of light in it, a squatting type with foot rests, from the hole a steep slant to the fecal pit, cover for the hole, always keep the hole covered when not in use.
 - (ii) Covered fecal pits.
 - (iii) Keep all garbage disposal and dirty water-drains either dry or clean enough to prevent fly maggots growing there.
 - (b) Keep flies from getting on food.
 - (i) All foods should be kept in screened cupboards or under screened covers.
 - (ii) Have windows and doors screened if possible, to keep flies away from the kitchen and eating places.
 - (iii) Swat flies, especially near foods.
 - (c) Keep flies from getting on dishes, bowls, chopsticks, by washing utensils clean after use and then keeping in screened cupboard or covering with screen cover.
8. Take preventive inoculations against typhoid and cholera, if possible. This vaccine is expensive and often impossible to buy. It can help prevent the above-mentioned contagious diseases, but these Health Rules are even more efficacious, if properly followed, in preventing these contagious diseases.

SHOOTING THE ANIMATION PAPERS

How to Avoid 'Paper-grain'

When the animation papers were shot for the first time, we found that the grain or texture of the paper, which in a static shot is not at all noticeable was picked up as a rapidly fluctuating or 'boiling' effect over all the white areas of the screen. It was especially noticeable and objectionable when the film switched from animated to static material, for, by its very absence in the static parts, it drew attention to its existence in the animated sections, and distracted the eye away from the animation proper.

To get rid of paper-grain we made a number of tests on different types of films stocks, and found that high contrast stocks aggravate the effect, and low-contrast stocks almost eliminate it. It can be totally eliminated by slightly over-exposing a low-contrast stock.

Film Stock

We got successful results by using 16 mm. Kodak negative Panchromatic Safety Film (No. 5240), which comes in 50 ft. or 100 ft. rolls, costing between \$3 and \$4 per 100 ft., not including development. For best results we over-exposed by two stops. A reversal rather than a negative 16 mm. stock should work equally well, provided it has similar characteristics.

Lighting

To avoid picking up any creases or undulations in the animation papers, we illuminated the papers from two sides, at an angle of 30° to 45°, giving a total of 40 foot-candles, and shooting at f.4 (film speed being 24 on a G.E. light meter). For shooting in countries with no electricity, a steady overcast daylight would be possible, or a steady reflected blue skylight, within the open air shadow cast by a building. Check should be kept of the illumination, by a light meter, at frequent intervals.

The Celluloids

These should lie flat on the papers, if not, the images painted on them will cast shadows on the papers, which will fluctuate from frame to frame. This can be done in a makeshift way by using a thumbtack at the edge of the celluloid to give a pressure in the middle of the celluloid, the celluloid being re-slipped under the thumbtack with every frame. But much the best method is to use a glass sheet with the celluloid taped on the underside and glue the glass sheet to strips of wood, which are hinged to the table-top so that the glass with the celluloid can be swung back when changing the paper between the shooting of each frame.

For a constant exposure throughout a film which uses celluloids at any one point, it is best to shoot *all* sections with the glass on top of the papers. Where there is no static material a blank celluloid should be taped to the underside of the glass to equalize conditions throughout.

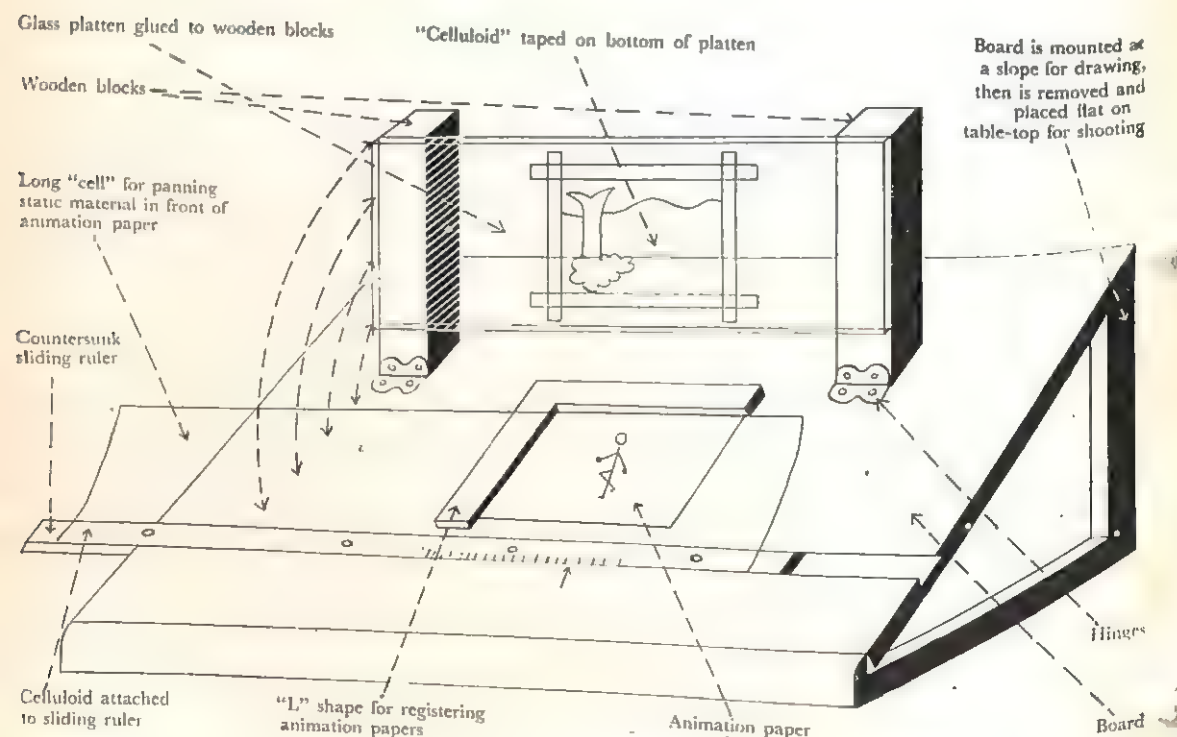
Panning

If a length of paper has to be panned across, there is the risk that, even though the edge is slid along one lobe of the 'L', it will joggle slightly from frame to frame, therefore, it is best for panning shots to paste the paper on to a stiffer cardboard, or else do the drawing directly on a card.

Panning static material on a celluloid on top of animated papers was the most awkward problem experienced in shooting, for the celluloid had to be removed between every frame and then replaced in a slightly different position. This difficulty was overcome by hinging the celluloid to a sliding ruler, or slat of wood which can be slid in a groove on the table-top. The celluloid is swung back each time the paper is changed, then swung into position again, and the slat of wood slid along in its groove by one stage of the panning movement. The procedure when shooting was then:

1. Place paper 1 in the 'L' shape.
2. Swing hinged panning celluloid on top of paper.
3. Swing hinged glass sheet into position on top of celluloid.
4. Expose one frame of film.
5. Swing glass out of the way.
6. Swing panning celluloid out of the way.
- 1a. Replace paper 1 with paper 2.
- 2a. Swing celluloid into position, and move the sliding ruler to which it is attached along by one stage of the panning movement.
- 3a. Swing glass into position on top of celluloid.
- 4a. Expose one frame of film. . .

The following diagram visualizes a convenient and simple device for combining a shooting and animation board.



APPENDIX 9

HOW TO MAKE ANIMATED MOVIES WITHOUT A CAMERA

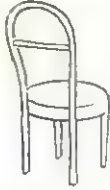
by

NORMAN McLAREN

(Reprinted from *Fundamental Education*, Vol. I, No. 4)

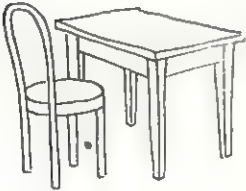
Things needed:

1. A chair



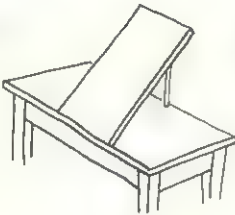
for the artist to sit on.

2. A table



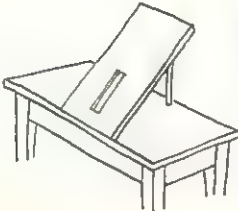
for the artist to sit at.

3. A board



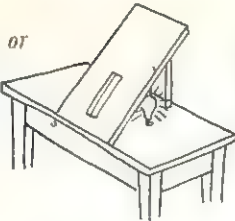
fixed securely on the table at an angle to allow the artist comfort while drawing.

4. A hole



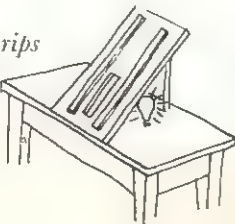
about 2" by 10" (50 mm. by 250 mm.) cut in the board to let light through from behind.

5. A lamp or mirror or even a wide sheet of white card



to place on the table behind the hole, to give illumination or to reflect skylight or daylight through the hole.

6. Two strips of wood



for fixing vertically onto the board about 3½" (90 mm.) apart, thus making a channel on the board above the hole.

The film holder:

7. *A piece of wood*

about $3\frac{1}{2}$ " by 21" (90 mm. \times 533 mm.), to slide smoothly up and down in the channel.

8. *A row of pegs along one side of the piece of wood*



so that the artist's free hand can easily push the wood up the channel a little at a time, while he is drawing frames of film. The pegs should be on the left-hand side for the right-handed artist, and on the right-hand side for the left-handed artist.

9. *A groove*



along the entire length of this piece of wood to hold the 35 mm. film. The groove must be 35 mm. wide and have lips on either side to hold the film securely in place. The lips should overhang about $\frac{1}{8}$ th of an inch (3 mm.) and should not press on the edges of the film enough to prevent it being pulled through the groove.

10. *A hole*

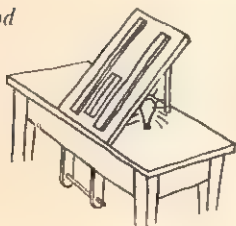


about 1" by 19" (25 mm. \times 480 mm.) should be cut out of the centre of the groove to let the light through from behind.

11. *A piece of frosted or ground glass, or thick ground celluloid*

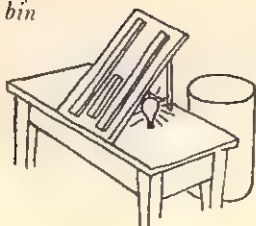
to be countersunk into this hole, so that the film held in the groove will have a solid but transparent support.

12. *A rod*



fixed *below* the table to carry 1,000' (304 metres) roll of blank 35 mm. film for drawing on. The film will feed upwards between the artist's knees and into the groove in the film holder.

13. *A bin*



placed on the far side of the table from the artist to catch the film as it drops down from the top end of the channel. The drop should be sufficient to let wet ink image drawn on the film dry before it hits the bottom of the bin.

14. Film



for drawing on. 35 mm. Machine leader, motion picture Safety film with negative perforations (Bell and Howell perforations). This is supplied in 1,000' (304 metres) rolls by any large motion picture stock supplier. This film is quite clear and transparent, and is used for drawing directly upon with ink.

15. Ink



black waterproof india ink. (Higgins' ink of this sort is very satisfactory). Care should be taken that the ink is opaque. The bottle of ink should be attached in a position convenient for the artist to dip into without too much movement.

16. Pens



any type of regular pen nib can be used. Various types can be employed for different thicknesses of line. For movie work stiff, rather than flexible, nibs are best, as it is easier to maintain a uniform thickness of line from frame to frame. For very fine lines, use Josef Gillott's crow-quill nibs, or a similar type.

17. Brushes



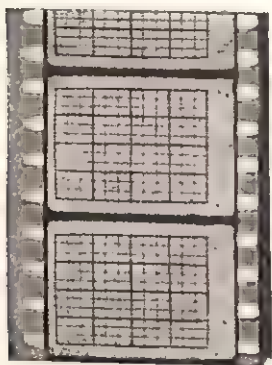
can also be used; in the hands of a western artist they have not been as good as pens for movie work. This is because the forms made with them fluctuate too uncontrollably from frame to frame. However, in oriental hands, a brush may be even better than a pen.

18. Registration Strip (Hand made)



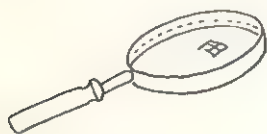
to make sure that the drawing on each frame of the movie film is in the same place. This registration strip is made by taking about 2' (608 mm.) of machine leader that the artist uses to draw on, and etching on it a grid system of lines. The grids should be clearly marked on each frame and the patterns should be identical. The sample herewith shows one such system of references lines. It indicates the sound-track area on one side and the frame-line area between the frames, leaving a rectangular area with diagonal lines which is the effective screen area for drawing on. For reference purposes while drawing, the frames should be numbered from 1 to 24, on the sound-track area or on the film holder at the side of the registration strip.

18a. *Alternative
Registration Strip*
(Photographically made)



This can be made by filming with a movie camera 25 frames of a card with a grid drawn on it. Though this has the advantage of producing a perfectly identical pattern on each frame, it has one disadvantage. Due to the fact that movie film shrinks with age, the strip may become shrunken so that it does not fit the machine leader on which the artist is drawing, and errors of vertical placement will develop in the registration of each frame. This can be remedied by reshooting the registration card onto new film every few months, so that strips of varying degrees of shrunkenness are available. The artist then chooses one which will match the sprocket holes of the machine leader he is drawing on.

19. *A magnifying
glass*



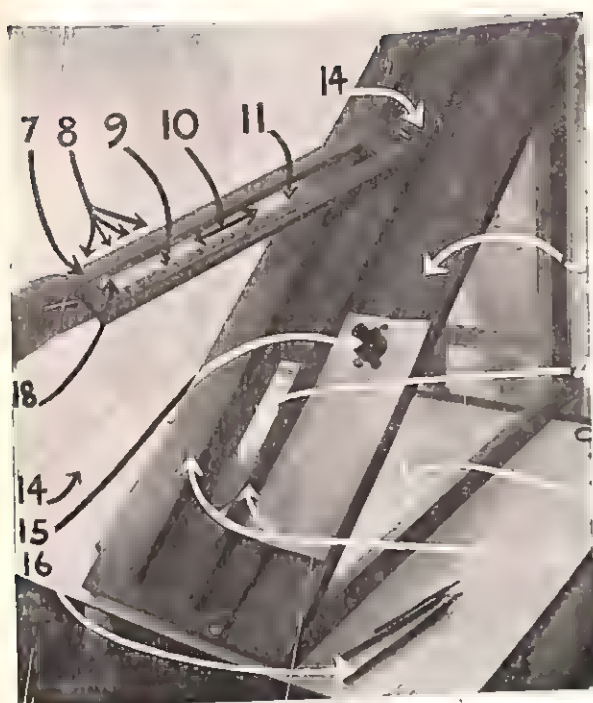
This is not absolutely essential, particularly for artists who are used to working close or on a small scale; but it is recommended, for not only does it increase the size of the image, but more important, it prevents extreme convergence of the eye-axes for long periods. The 'super-sight' magnifying glass on a jointed arm sold by the Boyer-Campbell Co., Detroit, Michigan, is excellent for this purpose. However, any large magnifying glass held on an arm will do.

20. *Before starting
to draw*

the artist should find the correct side of the film to draw on. He should make a few ink lines or blobs on both sides, wait until the ink is dry, and then try scratching or flaking the ink off. He should avoid the side which flakes off easily and draw only on the side which the ink clings to.

21. *The 24 frames*

of clear film above the registration strip are drawn at one time; starting from the top and working down, they represent one second of time. The artist then stops drawing and pulls the 24 frames of film up through the groove until the last frame drawn is at the top, and there is only clear film in the groove. He then starts drawing the next 24 frames. And so on. For animating purposes, it is often best not to complete each frame and then move on to the next, but rather to select the most important moving element and animate it first, over quite a long stretch of film. Then pull the film back



The camera brings together some of the separate items described so far.

